1998

The Effects of Dysphoria, Self-Relevance, and Outcome on Hindsight Bias

Gregory W. Bailey
Loyola University Chicago

LOYOLA UNIVERSITY OF CHICAGO

THE EFFECTS OF DYSPHORIA, SELF-RELEVANCE, AND OUTCOME ON HINDSIGHT BIAS

A THESIS SUBMITTED TO

TO THE FACULTY OF THE GRADUATE SCHOOL

IN CANDIDACY FOR THE DEGREE OF

MASTER OF ARTS

DEPARTMENT OF PSYCHOLOGY

BY

GREGORY W. BAILEY

CHICAGO, ILLINOIS

MAY, 1998

TABLE OF CONTENTS

LIST OF TABLES.....iv

LIST OF ILLUSTRATIONS.....v

ABSTRACT.....vi

Chapter

I. REVIEW OF RELATED LITERATURE.....1

II. METHOD.....19

III. RESULTS.....27

IV. DISCUSSION.....48

APPENDIX

A. HYPOTHETICAL SCENARIOS 57

REFERENCES.....159

VITA.....165

LIST OF TABLES

Table Page

1. Mean "Good" and "Bad" Ratings for the Job Scenario.....29

2. Mean "Good" and "Bad" Ratings for the Movie Scenario....30

3. Mean "Good" and "Bad" Ratings for the Phone Scenario.....31

4. Mean "Good" and "Bad" Ratings for the School Scenario....32

5. Mean Self-Relevance Manipulation Check Ratings for the Job Scenario.....34

6. Mean Self-Relevance Manipulation Check Ratings for the Movie Scenario.....35

7. Mean Self-Relevance Manipulation Check Ratings for the Phone Scenario.....36

8. Mean Self-Relevance Manipulation Check Ratings for the School Scenario.....37

LIST OF ILLUSTRATIONS

Figure Page

1. Mean Likelihood Ratings for Self-Relevant Scenarios.....40

2. Mean Likelihood Ratings for Non-Self-Relevant Scenarios.....41

ABSTRACT

Hindsight bias and how it relates to dysphoria, outcome, and self-relevance is examined. Each variable has been examined with respect to hindsight bias independently in previous research. The present study examined them simultaneously. Individuals rated the likelihood of possible outcomes to four different hypothetical scenarios with no outcome knowledge and then again after receiving outcome knowledge. A 2 (Group: Dysphoric, Nondysphoric) X 2 (Outcome: Positive, Negative) X 2 (Situation: Self-Relevant, Non-Self-Relevant) X 2 (Time: Time 1, Time 2) factorial design was used. Although the outcome variable was not important in explaining hindsight bias, the self-relevance variable was. These findings were discussed with regard to literature on attributional style and self-relevance. Differences in hindsight bias were observed across the different types of scenarios, supporting the idea that hindsight bias may be context-specific. As a result, analyses collapsing across the different scenarios may have been limited by large amounts of error introduced. This context-specific view of hindsight bias was discussed with regard to the hindsight bias literature.

CHAPTER I

REVIEW OF RELATED LITERATURE

The hindsight bias refers to the tendency for people who have gained knowledge regarding the outcome of an event to feel that they "knew it all along," or to believe falsely that they would have predicted the outcome (Hawkins & Hastie, 1990). Fischoff (1975) was the first to systematically study hindsight bias, finding not only that outcome knowledge increases its perceived likelihood, but also that individuals are unaware of this influence. Since Fischoff's (1975) original study, many others have attempted to study hindsight bias in a wide variety of situations, including trivia questions (Fischoff, 1977), medical decisions (Arkes, Wortmann, Saville, & Harkness, 1981), and reactions to real-world events (Bryant & Brockway, 1997).

Basic Hindsight Bias Studies

The typical hindsight study compares the performance of a foresight group and a hindsight group (e.g., Christensen-Szalawski & Willham, 1991; Fischoff, 1975). Both groups are presented with information about a chance event which has more than one possible outcome. They are asked to report the likelihood that each of these outcomes will occur. The foresight group makes estimates based solely on the information presented, while the hindsight group is given the additional information of which outcome actually occurred. Although the hindsight group does have knowledge of the actual outcome, individuals in this group are asked to estimate the likelihood of possible outcomes as if they did not know the actual outcome. The difference between the probability estimates of these two groups constitutes the hindsight bias.

The effects of hindsight bias have also been demonstrated using a within-subjects method (e.g., Fischoff, 1977; Fischoff & Beyth, 1975). In this context, as before, participants make estimates of the likelihood of event outcomes. Then, after receiving information about the correct outcome, they are asked to recall their original estimates. Hindsight bias occurs by way of individuals recalling outcomes which occurred as more likely in hindsight than in foresight. Additionally, outcomes that did not occur are recalled as less likely in hindsight than in foresight.

Cognitive Explanations for Hindsight Bias

The process by which outcome information becomes integrated into a judge's pre-outcome knowledge about the event was termed "creeping determinism" by Fischoff (1975). It was described as follows:

> On hearing the answer to a question or learning the outcome of an event... people may immediately integrate that answer with whatever they know about the topic...[This integration] may involve both reinterpreting previously held information to make sense out of it in light of the reported answer and strengthening associative links with reasons supporting the reported answer (Fischoff, 1977, p. 356).

Furthermore, "the characteristic effect of creeping determinism was the tendency to perceive a reported outcome as virtually inevitable, reflected in retrospective probability estimates, because of the seemingly unalterable sequence of events leading up to it" (Hawkins & Hastie, 1990, p. 313).

In addition to this immediate assimilation, there have been two other cognitive explanations for hindsight bias (Hawkins & Hastie, 1990; Schkade & Kilbourne, 1991). First, selective recall refers to the idea that knowledge of the correct outcome "primes memory search, making evidence consistent with the outcome that occurs

easier to retrieve. This leads to the retrieval of a disproportionate share of outcome-supporting evidence, which in turn induces hindsight probabilities biased toward the outcome that occurred" (Schkade & Kilbourne, 1991, p. 109). Secondly, the "anchor and adjust" strategy refers to the idea that individuals anchor on the known outcome and then adjust to reflect the uncertainty that existed before knowledge of the outcome (Hawkins & Hastie, 1990). However, these two explanations have been unable to account for some of the moderating variables of hindsight bias (Hawkins & Hastie, 1990; Schkade & Kilbourne, 1991).

Moderating Variables

Many variables have been shown to moderate the hindsight bias, including the experience of the estimator (Christensen-Szalawski & Willham, 1991), the difficulty of the problem (Christensen-Szalawski & Willham, 1991), and the outcome itself, which has been examined by way of its magnitude (Walster, 1967), its vividness (Carli & Leonard, 1989; Janoff-Bulman, Timko, & Carli, 1985), and its status of occurrence (i.e., did the outcome occur or not occur) (Christensen-Szalawski & Willham, 1991). Studies have also looked at the effects of the surprisingness of an outcome on hindsight bias (Mazursky & Ofir, 1990; Schkade & Kilbourne, 1991; Verplanken & Pieters, 1988).

Two studies have demonstrated that there was a reverse hindsight bias for extremely surprising events (Mazursky & Ofir, 1990; Verplanken & Pieters, 1988). In these cases, "outcome feedback may produce a different response-more along the lines of 'I never would have known it'-when participants either (a) have no familiarity with the outcome or (b) start off being confident in what turns out to be the wrong outcome" (Hoch & Loewenstein, 1989, p. 606). Unfortunately, however, both studies demonstrating the reverse hindsight bias have received criticism which has cast

considerable doubt on their findings (Arkes, 1988; Mark & Mellor, 1994). For example, Verplanken and Pieters (1988) investigated hindsight bias in the context of the Chernobyl disaster by asking participants to estimate the chances of an accident causing a large number of deaths (specified as over 1,000 casualties in ten years) before and after the actual disaster. The hindsight estimates were lower, which was interpreted as evidence of the reverse hindsight bias. However, as Arkes (1988) comments, since merely a few dozen workers were actually killed in the Chernobyl tragedy, and not over 1,000, the outcome investigated did not occur. Thus, the lower hindsight estimates are consistent with what would be expected from the typical conception of hindsight bias (i.e., a lower probability hindsight estimate for an event which did not occur) rather than reverse hindsight bias.

Not only has the work demonstrating the reverse hindsight bias as a response to surprising outcomes been criticized, but more recent research on this topic has contradicted these findings (Schkade & Kilbourne, 1991). Schkade and Kilbourne (1991) examined surprisingness by looking at how expectations might affect hindsight bias. Because having an expectation is thought to activate a cognitive schema, an outcome consistent with one's expectation requires only minor reinterpretation of information held beforehand in the schema. With only a slight amount of updating of existing cognitive structures, a small hindsight bias would be predicted (Schkade & Kilbourne, 1991). However, if the outcome is not consistent with one's expectation, many adjustments must be made to make sense of the activated schema. Consequently, "because of the potential for greater changes in cognitive structures, outcomes that are inconsistent with expectations (i.e., that 'surprise' retrospective judges) should result in a larger hindsight bias than that for consistent outcomes (i.e., that confirm expectations)" (Schkade & Kilbourne, 1991, p. 109). Additionally,

Schkade and Kilbourne (1991) predicted that unpleasant or damaging events would exhibit a greater hindsight bias than positive ones because our schemas include expectations for mostly positive outcomes (except in depression). The findings of Schkade and Kilbourne (1991) supported both their predictions regarding expectations and negative outcomes. Hindsight bias was larger in cases where outcomes were inconsistent with expectations and for negative outcomes (which are seen as inconsistent with expectations).

Another factor which has been examined in the context of hindsight bias is the extent to which an outcome is self-relevant. Here, an outcome was self-relevant to an individual if it had been experienced by the individual (Mark & Mellor, 1991). The context used was a job layoff in which not all workers had been laid-off.

Previous hindsight bias research has led to opposing predictions about the influence of self-relevance. Walster (1967) found that individuals have a greater need to see the world as predictable when the consequences of an action are important. Because the consequences of a layoff would be most important for laid-off workers, these workers would be expected to see the world as more predictable and to show the greatest hindsight bias. Second, Schkade and Kilbourne (1991), as previously mentioned, found that outcomes inconsistent with expectations and negative outcomes, which both generate more sense-making, resulted in greater hindsight bias. Therefore, "a self-relevant outcome, such as being laid off, should generate considerable sense-making; thus, according to Schkade and Kilbourne's reasoning, those who are laid off should exhibit the most hindsight bias with respect to the layoff" (Mark & Mellor, 1991, p. 570).

In contrast, additional research leads to the prediction that self-relevance will decrease hindsight bias. The literature on the self-serving bias, or tendency for

individuals to avoid blame for negative events "leads to the prediction that, in the case of negative outcomes, the more self-relevant the outcome is, the less hindsight bias will occur because an acknowledgment of predictability would increase internal attributions for one's plight " (Mark & Mellor, 1991, p. 570). Furthermore, because self-relevant outcomes are likely to elicit stronger emotional reactions and to be more memorable, it may be the case that laid-off workers may report less hindsight bias as a result of the memories associated with the outcome precluding hindsight bias (Mark & Mellor, 1991). In other words, some degree of interference is necessary for hindsight bias to occur (Hell, Gigerenzer, Gauggel, Mall, & Muller, 1988). Thus, the reaction to a self-relevant outcome may be more memorable, resulting in less interference and making hindsight bias less likely .

To test these predictions regarding self-relevance and hindsight bias, retrospections regarding the foreseeability of a layoff were ascertained from laid-off workers, survivors of the layoffs, and community members. The self-relevance of the layoff was found to reduce hindsight bias as community members showed more foreseeability than survivors, who showed more foreseeability than laid-off workers (Mark & Mellor, 1991).

Although this finding was consistent with both the predictions made on the basis of the self-serving bias and the inhibition of hindsight bias due to memories associated with the self-relevant outcome, the authors believe that one's tendency to avoid blame for negative outcomes is more likely to be responsible for the reduction in hindsight bias:

> To acknowledge that the layoffs (negative event) were foreseeable might have been to imply psychologically that the workers were at least partially culpable for the negative consequences of the layoff: If they could see it coming, they

should have been prepared for it (Mark & Mellor, 1991, p. 575).

As Mark and Mellor (1991) suggest in discussing their results, there may be further evidence consistent with the notion that a reduction in hindsight bias for a self-relevant outcome may be due to one's tendency to avoid blame for the outcome. Pennington, Rutter, McKenna, and Morley (1980) examined foresight and hindsight estimates of women regarding the outcome of a pregnancy test. It was found that women for whom the pregnancy test result was positive showed hindsight bias, but women for whom the result of the test was negative did not. It is possible that women with a negative pregnancy test result failed to exhibit hindsight bias because reporting the outcome as foreseeable may imply that they are at least somewhat responsible for the negative test result. On the other hand, the demonstration of hindsight bias by women obtaining a positive pregnancy test result may be viewed as their taking responsibility, or "blaming themselves," for the positive test result. Both of these explanations are consistent with the assertion of Mark and Mellor (1991).

Dysphoria and the Hindsight Bias

More recent research has turned from cognitive explanations of hindsight bias to motivational and personality variables which may influence the effect (Hawkins & Hastie, 1990). For example, Mark and Mellor (1991) suggested that individuals' motivation to avoid self-blame influences hindsight bias. Hindsight bias has been found to be related to several individual difference variables, for example, the need for predictability in one's environment and for positive self-presentation (Campbell & Tesser, 1983), field dependence-independence (Davies, 1993), and motivation (Hell et al., 1988).

Continuing in this attempt to relate personality variables to hindsight bias, Haslam and Jayasinghe (1995) addressed the area of negative affect, or dysphoria.

Dysphorics, or individuals with subclinical depression, were hypothesized to be more likely to exhibit the hindsight bias for a few reasons. First, Fischoff's (1975) creeping determinism explanation for hindsight bias implies that people who have a tendency to exhibit deterministic thinking may be more likely to show hindsight bias. Dysphorics seem to show such thinking in their lack of control over their environment; that is, dysphorics tend to believe that events are out of their control and determined by external forces (Alloy & Abramson, 1988; Andersen, 1990). Second, because hindsight bias has been shown to decrease with increased cognitive effort (Creyer & Ross, 1993; Hell et al., 1988), "the finding that dysphoria interferes focally with effortful cognition (Hartlage, Alloy, Vazquez, & Dykman, 1993) implies an association with the bias" (Haslam & Jayasinghe, 1995, p. 128). Because of dysphorics' decreased cognitive effort, their hindsight bias may be greater. Finally, intolerance for ambiguity has been associated with both dysphoria and the hindsight bias (Andersen & Schwartz, 1992; Campbell & Tesser, 1983).

Haslam and Jayasinghe (1995) had students predict their grades on an exam to be taken a week later. They received their exam grades two weeks after taking the exam. Finally, students were asked to recall their initial predictions a week after receiving their grades. The prediction that dysphorics would be more likely than non-dysphorics to show the hindsight bias was supported using a chi-square analysis (Haslam & Jayasinghe, 1995). Looking at the proportion of dysphoric and non-dysphoric students who showed the bias given their prediction (overly optimistic/overly pessimistic), hindsight bias again occurred more frequently among the dysphorics and occurred regardless of whether the prediction was optimistic or pessimistic.

Although Haslam and Jayasinghe (1995) found a relationship between dysphoria and the hindsight bias, their study had some problems. First, the criterion for entry into the dysphoria group was not particularly strict. Students were classified as dysphoric if their BDI score was 6 or above and non-dysphoric if their BDI score was 5 or below. The mean BDI scores for the dysphoric group at the two assessments were 8.55 and 9.96, which fall into the none or minimal range of depression (Beck, Steer, & Garbin, 1988), as did the means for the nondysphoric group. Defining the dysphoric group more rigorously could have ensured that its mean BDI scores fall, at the very least, in the mild to moderate range of depression, 10-18 (Beck et al., 1988).

Another grouping problem in the Haslam and Jayasinghe (1995) study was observed in categorizing individuals into bias groups. Participants were placed into one of four groups based on the ordinal pattern among their prediction, their grade, and their recall (Haslam & Jayasinghe, 1995). For example, if an individual's prediction was greater than the recall of his or her prediction, which was greater than or equal to his or her actual grade (i.e., Prediction > Recall >= Grade), he or she would be placed in the hindsight category. Clearly, such an ordinal grouping scheme is less accurate than attempting to quantify the difference between these variables. However, this grouping problem was exacerbated by the inclusion of an unnecessary group. Placement in the "Retrospective overshoot" group required that the recall of a participant's prediction differ from his or her grade "in the opposite direction of the prediction" (Haslam & Jayasinghe, 1995, p. 130). Thus, if an individual's grade was less than his or her prediction and his or her recall was less than the grade (i.e., Prediction > Grade> Recall), instead of being placed in the hindsight group for what seems an exaggerated hindsight bias, he or she was placed in a different group.

A final complication involved the task used in the study by Haslam and Jayasinghe (1995). While examining hindsight bias within the context of exam performance ensures a personally salient task, it may also complicate matters. Research in a similar area has found that one's estimations may be different when regarding performance. In the area of consensus estimation, individuals are asked to estimate the extent to which others are similar to themselves. Campbell (1986) has found that "depressed subjects were less likely to overestimate consensus for their opinions and to underestimate consensus for their abilities" (p. 290). Therefore, one may wonder if a similar circumstance arises in the area of hindsight bias. That is, it may be the case that hindsight bias may be reduced or increased when considering one's performance as a function of dysphoria. Furthermore, the context of one's exam performance is clearly self-relevant. Recall that self-relevance is a moderating factor of hindsight bias (Mark & Mellor, 1991). It will later be discussed how self-relevance may affect depressed and nondepressed individuals differently.

Dysphoria and Negative Thinking

In addition to the three reasons discussed by Haslam and Jayasinghe (1995), there are additional reasons suggesting that dysphorics might differ from nondysphorics with respect to hindsight bias. First, the cognitive theory of depression, which asserts that depressed individuals show more negative views of the self, the world, and the future, has received a great deal of empirical support with respect to its descriptive claims (Haaga, Dyck, & Ernst, 1991). More specifically, the empirical evidence for this theory can be divided into that which examines negative bias, or consistent negativity over time, and distortion, which requires perceptions inconsistent with objective reality. Empirical results seem to support a cognitive bias

in depression (Haaga et al., 1991). That is, depressives seem to demonstrate consistently negative cognitions.

The support for cognitive distortion in depression is not conclusive (Haaga et al., 1991). Within this area is the notion of "depressive realism," or the idea that "depressed people are more realistic or accurate in their perceptions and judgments than their nondepressed counterparts, who more frequently make distorted or biased judgments" (Alloy & Abramson, 1988, p. 566). While there has been some empirical support for depressive realism, there is also evidence inconsistent with this argument (Ackerman & DeRubeis, 1991). In fact, recent evidence has supported the claim that depressive realism may be a function of how it is measured, and has also indicated that negative distortion, rather than a lack of distortion, is associated with depression (Albright & Henderson, 1995).

Thus, it appears that there is evidence to support the idea that depressed people show a negative bias, while the evidence on negative distortion is much less clear. Although its name implies it is a bias, hindsight bias can be considered a distortion. Recall that a distortion requires perceptions that are inconsistent with objective reality (Haaga et al., 1991). In the case of hindsight bias, likelihood estimates without outcome knowledge would serve as "objective" reality. Thus, when individuals with outcome knowledge show higher likelihood estimates, we observe a distortion. If depression and distortion were clearly related, then it could be said that depressed people would be more likely to exhibit hindsight bias because it is a distortion. Unfortunately, the relationship between depression and distortion is not clear (Haaga et al., 1991).

As previously mentioned, however, depression has been associated with negative bias, or consistent negativity over time (Haaga et al., 1991). Depressed

individuals hold negative views of the self, the future, and the world. On a variety of tasks, depressed people have demonstrated lower levels of self-expectation (e.g., Lobitz & Post, 1979). The idea that depressed individuals show negative expectations has been demonstrated in other contexts as well. Several studies have found that depressed individuals have a greater tendency to make negative inferences exceeding the content of hypothetical situations than nondepressed individuals or psychiatric controls (Burns, Shaw, & Croker, 1987; Dobson & Shaw, 1986; Haley, Fine, Marriage, Moretti, & Freeman, 1985). Also, expectations for negative outcomes have been highly correlated with depression (Riskind, Rholes, Brannon, & Burdick, 1987). Furthermore, another study found that:

> depressed subjects were clearly less optimistic about their futures than were nondepressed subjects. Nondepressed subjects judged positive events as more likely to happen than negative events and negative events as less likely to happen to themselves than to the typical student at their university; depressed subjects did not differ in the probability estimates they offered for positive and negative events occurring to themselves but did indicate that positive events were less likely for themselves than for others. Relative to nondepressed subjects, depressed subjects rated positive events as less likely for themselves, negative events as more likely for themselves, and both positive and negative events as more likely for others (Pyszczynski, Holt, & Greenberg, 1987, p. 996).

Finally, further research has found not only that depressed individuals make pessimistic predictions, or estimate that negative events are likely and that positive events are not, but also do so with considerably more certainty (Andersen, 1990).

The consistent finding that depressed individuals have negative expectations suggests that the difference in hindsight bias between nondysphoric and dysphoric individuals might be affected by the nature of an event's outcome. Recall the results of Schkade and Kilbourne (1991) that hindsight bias was larger in cases where outcomes were inconsistent with expectations. Therefore, we might expect that depressed individuals, who have relatively negative expectations, would show less hindsight bias for negative outcomes and greater hindsight bias for positive outcomes than nondepressed individuals, who have positive expectations.

Dysphoria and Self-Blame

Depressed and nondepressed individuals typically differ with respect to the attributions they make for success and failure (Abramson, Seligman, & Teasdale, 1978; Sweeney, Anderson, & Bailey, 1986). For example, while nondepressed individuals are likely to attribute failure on a cognitive task to the task's difficulty, depressed individuals report their incompetence as the cause of failure (Rizley, 1978). For successes, results are just the opposite; nondepressed individuals typically attribute success to their personal ability, while depressed individuals cite task ease as the cause of success.

The finding that depressed individuals attribute failure to themselves and success to external causes has been widespread. In a meta-analysis involving over one hundred studies and nearly 15,000 participants, the general finding was that depressed individuals attribute negative outcomes to internal, stable, and global causes and positive outcomes to external, unstable, and specific causes (Sweeney et al., 1986).

Janoff-Bulman (1979) distinguishes between two types of attributions to one's self, or self-blame, for negative outcomes. First, characterological self-blame is referred to as "esteem related self-blame focused on one's character, an overall view of

the kind of people individuals perceive themselves to be" (Janoff-Bulman, 1979, p. 1799). On the other hand, behavioral self-blame focuses on one's behavior rather than one's character. Depressed individuals were found to exhibit more characterological self-blame than nondepressed individuals, while behavioral self-blame did not differ between the two groups (Janoff-Bulman, 1979). Therefore, it seems that depressed individuals tend to blame their character, rather than their behavior, for negative outcomes. This is consistent with attributional research in which depressives demonstrate internal, stable, and global attributions for negative events.

Given these differences in self-blame and the contention of Mark and Mellor (1991) that the reduction in hindsight bias for negative, self-relevant outcomes is due to one's tendency to avoid blame for such outcomes, it seems likely that nondysphoric and dysphoric individuals would differ in hindsight bias for self-relevant and non-self-relevant outcomes. That is, while nondysphorics may show less hindsight bias for self-relevant, negative outcomes, due to their avoidance of self-blame, dysphorics are likely to fail to exhibit this reduction as they are prone to engage in self-blame for such outcomes. Likewise, in the case of self-relevant, positive outcomes, dysphoric individuals may show less hindsight bias than nondysphorics. Because showing hindsight bias may imply that they were responsible for the outcome, dysphorics, who are unlikely to attribute positive outcomes to themselves, may show less hindsight bias than nondysphorics, who are likely to attribute positive outcomes to themselves.

Overview of the Proposed Study

The proposed study seeks to improve on the work of Haslam and Jayasinghe (1995) in examining the relationship between dysphoria and hindsight bias. First, it attempts to overcome the problems with the previous study which have already been addressed by using a more rigorous criterion for classification into the dysphoric

group, a quantification of hindsight bias, and a task not contingent on participants' performance.

Furthermore, the proposed study includes additional factors, recognizing that the relationship between dysphoria and hindsight bias may be quite complicated. First, it addresses the issue of different outcomes (i.e., positive and negative) in the comparison between dysphorics' and nondysphorics' tendency to demonstrate hindsight bias. While one could look at the finding of Haslam and Jayasinghe (1995) that hindsight bias was noticeably more frequent among dysphorics, regardless of an overly optimistic or overly pessimistic prediction, as evidence that there was no difference in hindsight bias for positive and negative outcomes between these two groups, this finding may be an artifact of their method to classify outcomes. An ordinal pattern between grade and prediction may not be sufficient to assess a positive or negative outcome. An individual receiving a grade greater than his or her prediction cannot unambiguously be said to have experienced a positive outcome. One might determine the positive or negative nature of the outcome not by comparing the grade received to his or her prediction, but by comparing the grade received to the performance of others or to his or her performance on previous exams or in other classes. One must be careful when interpreting his or her findings because, "without explicit and unambiguous definitions of to-be-judged events and careful assessment of what subjects believed the outcome was...researchers cannot know how to label the findings" (Hawkins & Hastie, 1990, p. 314).

Second, an attempt is made to see how self-relevance may influence the relationship between dysphoria and hindsight bias. One's tendency to avoid self-blame was suggested to have been responsible for the reduction in hindsight bias for self-relevant outcomes (Mark & Mellor, 1991). Thus, the difference between dysphorics

and nondysphorics with respect to self-blame may lead to a differential reduction in hindsight bias for the two groups.

There were four independent variables in this study. Group (dysphoric, nondysphoric) was the only between-subject variable of the four. Self-relevance (self-relevant, non-self-relevant), outcome (positive, negative), and time (time 1, time 2) were the remaining three independent variables, which were manipulated in a repeated measures design. Self-relevance was manipulated by changing the point of view of hypothetical scenarios from the second person (self-relevant) to the third person (non-self-relevant). Two of the scenarios participants read were self-relevant and two were non-self-relevant. Outcome was manipulated by varying the outcome which individuals received as the actual outcome to hypothetical scenarios at the second session. For both self-relevant and non-self-relevant scenarios, one outcome was positive and one was negative. Time simply refers to the occurrence of a delay between likelihood estimates. During the first session, participants rated the likelihood of a variety of outcomes for each scenario. At the second session, participants learned the outcome of the event and made ratings again for the likelihood of the outcomes as if they did not know the actual outcome. The dependent variable in this study was hindsight bias, which was assessed by examining the difference between likelihood estimates without outcome knowledge (time 1) and likelihood estimates with outcome knowledge (time 2). Thus, each participant read four scenarios: (1) self-relevant, positive outcome; (2) self-relevant, negative outcome; (3) non-self-relevant, positive outcome; and (4) non-self-relevant, negative outcome. Four different scenarios were used and these were counterbalanced across the four conditions.

Therefore, the proposed study further examines the relationship between dysphoria and hindsight bias by inclusion of self-relevant and non-self-relevant scenarios as well as positive and negative outcomes to these scenarios. Several hypotheses were made for the current study. These hypotheses were founded largely on the previous work of Schkade and Kilbourne (1991) and Mark and Mellor (1991). As discussed earlier, the results of Mark and Mellor were not consistent with the predictions based on the findings of Schkade and Kilbourne. Thus, two sets of competing predictions were made.

According to Schkade and Kilbourne (1991), hindsight bias is greater for outcomes which are inconsistent with expectations. Because dysphoric individuals tend to have negative expectations, they should exhibit less hindsight bias for negative outcomes and greater hindsight bias for positive (unexpected) outcomes than nondysphoric individuals, who tend to have positive expectations. This would occur regardless of the self-relevance of the situation. Therefore, if basing our predictions on Schkade and Kilbourne's findings, we would hypothesize that dysphorics would show less hindsight bias for negative outcomes and greater hindsight bias for positive outcomes, regardless of self-relevance, as compared to nondysphorics.

On the other hand, Mark and Mellor (1991) found that individuals showed reduced hindsight bias for self-relevant, negative outcomes and asserted that this finding was due to the tendency to avoid blame for the negative outcome. This finding would apply to predictions regarding self-relevant situations. For self-relevant scenarios with negative outcomes, we would expect that nondysphorics would show less hindsight bias than dysphorics because nondysphorics tend to avoid blame for negative events while dysphorics do not. For self-relevant scenarios with positive outcomes, just the opposite would be expected; nondysphorics were predicted to show

greater hindsight bias than dysphorics because nondysphorics tend to attribute positive outcomes to themselves, while dysphorics do not. Therefore, when basing our predictions on Mark and Mellor's findings, we hypothesized that dysphorics would show greater hindsight bias for self-relevant scenarios with negative outcomes and less hindsight bias for self-relevant scenarios with positive outcomes, as compared to nondysphorics.

CHAPTER II

METHOD

Participants

Two hundred and twenty-nine undergraduates from the Loyola University Psychology Department Subject Pool participated in this experiment. They were classified using the Beck Depression Inventory into dysphoric and nondysphoric groups (BDI; Beck, Rush, Shaw, & Emery, 1979). Participants completed the BDI on two occasions . Using the same grouping criteria as a recent study using this population (Albright & Henderson, 1995), a participant was classified as dysphoric if his or her BDI score was greater than or equal to 10 and nondysphoric if less than or equal to 9 at both testing occasions. The present study had 57 participants (24.9 %) who met the criteria for the dysphoric group and 147 participants (64.2%) who met the criteria for the nondysphoric group. The mean BDI score for the dysphoric group at time 1 was 16.35 and at time 2 was 14.70 and the mean BDI score for the nondysphoric group was 4.21 at time 1 and 3.10 at time 2. Information gathered from the 25 participants (10.9%) who did not meet either of these two criteria at both sessions were not included in the statistical analysis. The percentage of individuals in each group was similar to that of a recent study using the same criteria described above on a similar pool of participants; Albright and Henderson (1995) found that 26.5% of participants were classified as dysphoric, 59.1% were classified as nondysphoric, and 14.4% were not included in the analysis.

Design

A 2 (Group: dysphoric, nondysphoric) X 2 (Outcome: positive, negative) X 2 (Self-Relevance: self-relevant, non-self-relevant) X 2 (Time: time 1, time 2) factorial design was used. The group variable was an individual difference variable and was determined by participants' score on the BDI (Beck et al., 1979). The outcome variable was manipulated in the second testing session; the event scenario was accompanied by one of two outcomes, positive or negative. This outcome appeared as the last sentence in the scenario. The outcome variable was a repeated measures variable as individuals made likelihood estimates for both positive and negative outcomes (for different scenarios). The self-relevance variable was determined by the nature of the scenario. It was also a repeated measures variable as individuals made likelihood estimates for both self-relevant and non-self-relevant scenarios. Similarly, all participants made likelihood estimates at time 1 and time 2. Thus, the design was fully factorial in that hindsight bias (i.e., difference between time 1 and time 2 likelihood estimates) was assessed for each participant in response to one self-relevant scenario with a positive outcome, one self-relevant scenario with a negative outcome, one non-self-relevant scenario with a positive outcome, and one non-self-relevant scenario with a negative outcome. The order of the scenarios was counterbalanced, as was the specific scenarios used for each condition.

Materials

Beck Depression Inventory (BDI). The BDI (Beck et al., 1979) was used to assess dysphoria. This instrument has been employed in over 1,000 research studies (Beck et al., 1988). Meta-analysis of the internal consistency of the BDI within non-psychiatric samples has yielded a mean coefficient alpha of 0.81 (ranging from 0.73 to 0.92), while pre- and posttest administrations of the BDI have yielded Pearson

product-moment correlations for nonpsychiatric samples ranging from 0.60 to 0.83 (Beck et al., 1988). The concurrent validity of the BDI also appears quite high:

> The BDI is not only related to clinical assessment of depression (> 0.60), but also demonstrates strong positive relationships with four well-researched instruments measuring depression: (a) the HSRD (Hamilton Psychiatric Rating Scale for Depression), (b) the Zung (Zung Self-Reported Depression Scale), (c) the MMPI-D scale (Minnesota Multiphasic Personality Inventory Depression Scale), and (d) the MAACL-D scale (the Multiple Affect Adjective Checklist Depression Scale). Positive relationships were also found between the BDI and a variety of other depression instruments. The BDI's relationship with other instruments were comparable regardless of whether or not the sample was psychiatric or nonpsychiatric (Beck et al., 1988, p. 95).

Finally, the BDI also appears to have strong construct validity as it reflects hypothesized behavioral, attitudinal, and physiological relationships with depression (Beck et al., 1988).

Interpersonal Reactivity Index. Participants were also given the Interpersonal Reactivity Index (IRI; Davis, 1983). This is a measure of dispositional empathy. It consists of 28 items to which participants respond on a five-point Likert-type scale (1=does not describe me well, 5=describes me very well), as defined by the original IRI (Davis, 1983). This measure was included with the notion that it might be used as a covariate if the self-relevance manipulation failed to influence participants' perceptions of the relevance of scenarios. Because self-relevance was successfully manipulated, this measure will not be considered further.

Scenario and event outcomes. The event scenarios and possible outcomes used in this experiment were created by the experimenter for this study. When making

likelihood estimates for each possible outcome, participants judged each outcome independently because evidence exists to show that individuals' estimates of the probability of different outcome do not necessarily add to 1.00 (Tversky & Kahneman, 1973).

Four hypothetical scenarios were used (see Appendix). Each described a common situation (at school, at work, going to a movie, making a phone call). There were two forms of each scenario, a self-relevant form, which was written in the second person and asked readers to imagine themselves in the situation as they read it, and a non-self-relevant form, which was written in the third person and asked readers to imagine fictional characters in the situations. Each participant was randomly assigned to receive two self-relevant and two non-self-relevant scenarios. Each scenario was followed by several possible outcomes along with instructions to rate the likelihood from 0% to 100% (0% = certain not to occur; 100% = certain to occur).

> The following is an example of one of the hypothetical scenarios used:
>
> For almost six months, you have been working evenings and weekends to help make a little extra spending money. Over this time, you have had an excellent record of attendance at work; you have rarely been late and have never failed to show up when scheduled.
>
> Your boss would like to give you a position with more responsibility. He explains that he is going to give you a larger and more important assignment on which to work and see how you do.
>
> During the several days while you are working on the new assignment, you happen to be late to work because of car trouble. On another day, you have to admit to your boss that you forgot the work you had done at home.

Further, for the example above, the positive outcome was getting a promotion after you brought in the work on the following day. The negative outcome was being fired by the boss.

In the second testing session, the materials were altered to manipulate outcome. The scenarios were identical to those participants read in the first session,

with the addition of one of the possible outcomes (positive or negative) provided with each scenario, written as the last sentence(s) of the scenario. Participants were randomly assigned to the different scenario conditions. As in the first session, a list of possible outcomes followed the scenarios, including the outcome identified in the last sentence(s) of the scenario. However, on this occasion, individuals were asked to rate the likelihood from 0% to 100% (0% = certain not to occur; 100% = certain to occur) of each outcome as if they did not know the actual outcome. Importantly, each scenario (e.g., job situation, movie) was counterbalanced across the self-relevance and outcome conditions.

Procedure

There were two testing sessions separated by two days. This time frame was chosen for two reasons. First, because hindsight bias "results hold across a range of time intervals (minutes to weeks) between initial judgments, outcome feedback, and second judgments" (Hawkins & Hastie, 1990, p. 314), it seems that a period of time of two days would permit forgetting of the original estimates, particularly because there were several additional outcomes in addition to the positive and negative outcomes of interest to interfere with recall. It is important to note that some degree of forgetting of the initial estimate is necessary for hindsight bias to occur (Hell et al., 1988). A period of two days also helped improve the likelihood that the dysphoric participants would remain in such a state for both sessions of testing.

Testing session 1. Participants were asked to read and sign a consent form. They were then given the testing materials. Participants were first asked to put the last four digits of their Social Security number on these materials, and were told that this information would be used solely for matching the materials from the two testing sessions.

Participants read four hypothetical scenarios describing common situations (at school, at work, going to a movie, making a phone call) and estimate the likelihood of several outcomes following each. Two of the scenarios were self-relevant (in this study, this means they were written in the second person). The other two were non-self-relevant (written in the third person). Within self-relevance conditions, one scenario had a positive outcome and one had a negative outcome. Which two scenarios were self-relevant and which two were non-self-relevant was counterbalanced among participants, as was the order of presentation of the scenarios. Furthermore, among the several possible outcomes, a positive and a negative outcome was of primary interest, while the other outcomes served to interfere with recall. Finally, participants filled out the Beck Depression Inventory (BDI) in order to assess dysphoria.

Testing session 2. Session 2 occurred 2-3 days after session 1. Participants were given the testing materials. They were again asked to put the last four digits of their Social Security number on these materials, and told that this information would be used solely for matching the materials from the two testing sessions.

Participants were again presented with the same hypothetical scenarios as in the first session, again in a counterbalanced order of presentation. However, in this case, the actual outcome of each scenario was provided, written as the last portion of the scenario. The actual outcomes received by participants differed and were factorially combined such that each participant received a positive outcome for one self-relevant scenario, a negative outcome for one self-relevant scenario, a positive outcome for one non-self-relevant scenario, and a negative outcome for one non-self-relevant scenario. After reading each scenario, participants were asked to provide likelihood estimates for several outcomes as if they did not know the actual outcome.

The actual phrasing of the request for individuals to make likelihood estimates for the outcomes is important. For the present study, this question was phrased in a manner similiar to a recent study (Bryant & Brockway, 1997). More specifically, participants were asked to make judgments for what they would have said the chance was of the outcome before they knew the actual outcome. Finally, participants filled out the BDI again as well as the IRI. Upon completing the testing materials, individuals were debriefed regarding their participation.

Statistical Treatment

This study involved the traditional approach of hypothesis testing. This approach has been heavily criticized. Opponents of this method are critical of the emphasis placed on an arbitrary probability value for determining the significance of results, especially because this focus ignores the importance of the statistical power of the analysis (Cohen, 1994; Loftus, 1993). Other arguments against the use of significance testing center on the confusion of statistically significant results with meaningful results and the tendency to view only portions of data (Cohen, 1994; Loftus, 1993). In defense of the use of hypothesis testing for the current study, proponents of this method have emphasized it as a standardized way of reporting results as well as stressed its appropriateness for the dichotomous decision involved in theory testing (Chow, 1988).

In order to meet the assumptions of an Analysis of Variance (ANOVA) the following analyses were performed. First, Levene's test for homogeneity of variance was conducted. While these results are not reported here, the data for this study met the assumptions adequately. The satisfaction of these two assumptions, along with the independence of difference scores, permitted the ANOVA to be performed. However,

due to the robustness of the ANOVA, these assumptions can frequently be violated without major implications (Howell, 1992).

Hypotheses were tested using repeated-measures analyses of variance. The alpha level for rejecting the null hypothesis was $p = .05$. The independent variables of self-relevance, outcome, and time were tested using a repeated measures design, while level of dysphoria was tested as a between-subjects variable. Additionally, manipulation checks (for the self-relevance and outcome manipulations) were calculated for each scenario.

Power Estimate

Christensen-Szalawski and Willham (1991) reported from their meta-analysis the following effect size for hindsight bias for all studies after correcting for unreliability, $d = 0.68$. However, for the studies using case histories, which are similar to the event scenarios used in the proposed study, the corrected $d = 0.61$. Using the latter effect size estimate, 45 participants would be needed in each group to achieve a power level of 0.80 (for alpha = 0.05). Since 57 individuals were obtained for the dysphoric group, and 147 individuals participated in the nondysphoric group, the present study achieved an adequate power level by this criterion.

CHAPTER III

RESULTS

Manipulation Checks

In order to examine the effect of event outcome and self-relevance on hindsight bias, it was important first to determine if these variables were successfully manipulated. After making their likelihood ratings, participants were asked to rate on 5-point, Likert-type scales how "good" the event outcome made them feel (0= not at all, 4 = very much) and how "bad" the event outcome made them feel (0= not at all, 4 = very much). Participants made "good" and "bad" ratings for each of the four scenarios (job, movie, phone, school). These ratings were submitted to a Multivariate Analysis of Variance (MANOVA), with group (dysphoric, nondysphoric) and manipulated outcome (positive, negative) as between-subject variables and repeated measures variables, respectively. Separate analyses were conducted for each scenario.

Similarly, for self-relevance, participants were asked to make three different ratings on 5-point, Likert-type scales. Individuals were asked to rate: (a) if this type of situation has ever "happened" to them (0= never and 4 = always), (b) if this type of situation made them "think" about similar situations from their own lives (0 = not at all and 4 = very much), and (c) the extent to which they "imagined" themselves in the situation when they read it (0 = not at all and 4 = completely). These ratings were submitted to a Multivariate Analysis of Variance (MANOVA), with group (dysphoric, nondysphoric) and manipulated self-relevance (self-relevant, non-self-relevant) as between-subject and repeated measures variables respectively and separate analyses

were conducted for each scenario. Results will be presented for "good" and "bad" ratings first, then results for self-relevance will be presented.

Outcome. For the job scenario, the omnibus MANOVA ("good" and "bad" ratings) was significant for the interaction between group and outcome, F (2, 199) = 5.02, $p < .05$. The omnibus MANOVA was also significant for the main effect of outcome, F (2, 199) = 185.70, $p < .05$, and for the main effect of group, F (2, 199) = 4.57, $p < .05$. Looking to the univariate analyses for participants' perceptions of how "good" the outcome was, there was a significant main effect of outcome (F (91, 200) = 337.37, $p < .05$), a significant main effect of group (F (1,200) = 4.04, $p < .05$), and a significant interaction between group and outcome (F (1, 200) = 9.97, $p < .05$)(see Table 1, left side). The main effect of outcome for "good" ratings indicated that positive job outcomes (M = 3.22, SD = 1.19) were rated as more "good" than negative job outcomes (M = .29, SD = .63), and the main effect of group revealed that nondysphorics (M = 1.96, SD = 1.78) rated the job scenario as more"good" than dysphorics (M = 1.37, SD = 1.62), regardless of manipulated outcome. However, the significant interaction demonstrates that nondysphorics (M = 3.40, SD = 1.00) rated positive job outcomes as more "good" than dysphorics (M = 2.64, SD = 1.55)(t (103) = 2.88, $p < .05$), but dysphoric (M = .41, SD = .80) and nondysphoric (M = .24, SD = .52) participants did not differ in their "good" ratings for negative job outcomes (t (97) = 1.25, $p > .05$).

Similarly, for participants' perceptions of how "bad" the job scenario was, a main effect of outcome indicated that negative outcomes were judged as more "bad" (M = 3.37, SD = .96) then positive outcomes (M = .78, SD = 1.21), F (1, 200) = 205.41, $p < .05$ (see Table 1, right side). Dysphoric and nondysphoric participants differed in their "bad" ratings as dysphorics rated the job scenario as more "bad" than

nondysphorics, regardless of outcome (Ms = 2.58 and 1.83, respectively, F (1,200) = 8.80, p < .05). The group X outcome interaction was not significant for participants' "bad" rating, F (1, 200) = 3.46, ns.

Table 1. Mean "Good" and "Bad" Ratings for the Job Scenario

		"Good" Ratings M	"Bad" Ratings M
Group	Outcome		
Dysphoric			
	Positive	2.64	1.40
	Negative	.41	3.50
Nondysphoric			
	Positive	3.40	.59
	Negative	.24	3.31

Thus, for the job scenario, the positive outcome was rated as more "good" and less "bad" than the negative outcome, suggesting that the outcome manipulation was successful. However, nondysphorics perceived outcomes as more "good" and dysphorics perceived outcomes as more "bad." This difference was particularly large for "good" ratings for positive outcomes, suggesting that dysphorics are less likely to perceive good following positive outcomes relative to nondysphorics. These findings will be considered again when the effect of event outcome on hindsight bias is discussed.

For the movie scenario (see Table 2), the omnibus MANOVA ("good" and "bad" ratings) revealed a significant main effect of outcome, F (2, 199) = 135.33, p < .05. The main effect of group and the Group X Outcome interaction were not significant in the omnibus analysis (F (2,199) = 1.43 and F (2, 199) = 1.04,

respectively. Univariate analyses for the main effect of outcome for "good" ratings revealed that the positive movie outcome (M = 3.10, SD = 1.04) was rated as more "good" than the negative movie outcome (M = .75, SD = .82), F (1,200) = 225.00, p < .05. Similarly, the negative movie outcome (M= 2.12, SD = 1.20) was rated as more "bad" than the positive movie outcome (M = .40, SD = .86), F (1, 200) = 106.56, p < .05.

Table 2. Mean "Good" and "Bad" Ratings for the Movie Scenario

		"Good" Ratings M	"Bad" Ratings M
Group	Outcome		
Dysphoric			
	Positive	2.84	.64
	Negative	.77	2.23
Nondysphoric			
	Positive	3.22	.28
	Negative	.74	2.09

These findings indicate that positive and negative outcome was successfully manipulated for the movie scenario. Importantly, dysphoric and nondysphoric participants did not differ in their perceptions of how "good" and "bad" the positive and negative outcomes were for this scenario.

Multivariate analyses for the phone scenario (see Table 3) indicated a significant omnibus main effect for outcome, F (2, 199) = 59.00, p < .05, and a significant omnibus main effect for group, F (2,199) = 11.08, p < .05. The omnibus Group X Outcome interaction was not significant, F (2, 199) = .84, ns. Univariate

analyses of "good" ratings revealed a main effect of outcome in which the positive phone outcome (M = 2.97, SD = 1.16) was rated as more "good" than the negative phone outcome (M = 1.14, SD = .99), F (1, 200) = 107.44, p < .05, and a main effect of group such that nondysphorics (M = 2.31, SD = 1.38) rated the phone scenario as more "good" than dysphorics (M = 1.49, SD = 1.34), F (1,200) = 15.33, p < .05.

Participants also rated how "bad" they perceived the positive and negative outcomes for the scenario; the univariate ANOVA for these ratings revealed a significant main effect of outcome, F (1,200) = 49.88, p < .05. Participants rated the negative phone outcome (M = 1.93, SD = 1.20) as more "bad" than the positive phone outcome (M = .57, SD = .95). Univariate analyses also showed a significant main effect of group, as dysphorics (M = 1.81, SD = 1.40) rated the phone scenario as more "bad" than nondysphorics (M 1.01, SD = 1.22), F (1,200) = 15.51, p < .05.

Table 3. Mean "Good" and "Bad" Ratings for the Phone Scenario

		"Good" Ratings M	"Bad" Ratings M
Group	Outcome		
Dysphoric			
	Positive	2.36	1.24
	Negative	.81	2.25
Nondysphoric			
	Positive	3.16	.36
	Negative	1.30	1.78

Thus, consistent with the intended manipulation, participants perceived the positive phone outcome as more "good" and less "bad" than the negative phone outcome. However, dysphoric and nondysphoric participants differed in how they perceived the phone scenario. Regardless of outcome, nondysphorics rated the phone scenario as more "bad" and less "good" than nondysphorics.

Finally, for the school scenario (see Table 4), the results were similar to those found for the movie scenario. The omnibus MANOVA revealed a significant main effect of outcome, F (2, 199) = 354.49, $p < .05$, but the main effect of group and the Group X Outcome interaction were not significant (F (2,199) = 1.01 and F (2, 199) = 1.59, respectively). Univariate analyses for "good" ratings indicated that the positive school outcome (M = 3.50, SD = 1.02) was rated as more good than the negative school outcome (M = .19, SD = .56), F (1,200) = 638.70, $p < .05$. Similarly for bad ratings, the main effect of outcome revealed that the negative school outcome (M = 3.50, SD = .91) was rated as more "bad" than the positive school outcome (M = .47, SD = .94), F (1, 200) = 448.10, $p < .05$.

Table 4. Mean "Good" and "Bad" Ratings for the School Scenario

		"Good" Ratings M	"Bad" Ratings M
Group	Outcome		
Dysphoric			
	Positive	3.32	.53
	Negative	.17	3.74
Nondysphoric			
	Positive	3.60	.44
	Negative	.20	3.43

These findings indicate that the manipulation of positive and negative outcome was successful for the school scenario. As was the case with the movie scenario, participants rated the positive outcome as more "good" and less "bad" than the negative outcome, and these ratings were consistent across dysphoric and nondysphoric groups.

Because analyses for hindsight bias were conducted by collapsing across scenarios, it is also important to examine the effects of outcome and group for participants' "good" and "bad" ratings collapsed across the four scenarios. Thus, a three-way repeated measures ANOVA was carried out with the between-subject variable of dysphoria and the within-subject variables of outcome (positive or negative) and rating (good or bad). The Group X Outcome X Rating interaction showed a trend toward significance (F (1,192) = 2.66, p <.10). There was also a significant Group X Rating interaction (F (1, 192) = 14.01, p < .05). Overall, dysphorics showed higher ratings for how "bad" an outcome was (M= 1.88, SD = .70) than non-dysphorics (M = 1.55, SD = .53) regardless of whether it was a positive or negative outcome, t (192) = 3.08, p < .05. Furthermore, non-dysphorics showed higher ratings for how good an outcome was (M = 1.96, SD = .46) than dysphorics (M = 1.77, SD = .61), t (192) = 2.09, p < .05. Therefore, dysphorics did not judge positive outcomes as positively as did nondysphorics, and viewed negative outcomes as more negative than nondysphorics.

Self-Relevance. In order to determine if self-relevance was successfully manipulated, participants' ratings of the scenarios in terms of self-relevance were analyzed. For the job scenario (see Table 5), the omnibus MANOVA indicated a significant main effect of self-relevance, F (3, 198) = 4.55, p < .05, but the main effect of group and the Group X Self-Relevance interaction was not significant (F (3, 198) =

.77 and F (3, 198) = .46, respectively). Univariate analyses for "imagined" ratings showed that individuals receiving the self-relevant job scenario (M = 2.45, SD = 1.36) imagined themselves in the situation to a greater extent than individuals receiving non-self-relevant scenarios (M = 1.76, SD = 1.24), F (1,200) = 8.36, p < .05. Individuals receiving self-relevant and non-self-relevant job scenarios did not differ with respect to ratings about similar experiences having "happened" to them or the degree to which the scenario made them "think" about their own experiences, F (1,200) = 1.53 and F (1,200) = .05, respectively.

Table 5. Mean Self-Relevance Manipulation Check Ratings for the Job Scenario

		"Similar Situation Happened" Rating M	"Think About Own Experiences" Rating M	"Extent Imagined Self in Situation" Rating M
Group	Outcome			
Dysphoric				
	Positive	.39	2.39	2.16
	Negative	.58	2.46	1.81
Nondysphoric				
	Positive	.53	2.22	2.57
	Negative	.43	2.24	1.75

Multivariate analyses for the movie scenario (see Table 6), showed similar results to those for the job scenario. The omnibus MANOVA revealed a significant main effect of self-relevance (F (3, 198) = 3.21, p < .05), while the main effect of group was not significant (F (3, 198) = .59, ns), nor was the Group X Self-Relevance interaction significant (F (3, 198) = .28, ns). Univariate analyses showed a main effect of self-relevance in which participants receiving self-relevant movie scenarios (M =

2.89, SD = 1.20) rated themselves as having "imagined" themselves in the scenario to a greater extent than participants receiving non-self-relevant movie scenarios (M = 2.49, SD = 1.22), F (1,200) = 4.02, p < .05. There were no significant differences between self-relevant and non-self-relevant scenarios for ratings about whether a situation similar to the scenario presented ever "happened" to the individual (F (1,200) = 1.63) and for ratings about whether the scenario made them "think" about real life situations which had happened to them (F (1,200) = .51, ns).

Table 6. Mean Self-Relevance Manipulation Check Ratings for the Movie Scenario

		"Similar Situation Happened" Rating M	"Think About Own Experiences" Rating M	"Extent Imagined Self in Situation" Rating M
Group	Outcome			
Dysphoric				
	Positive	1.67	2.82	2.94
	Negative	1.96	2.38	2.58
Nondysphoric				
	Positive	1.66	2.14	2.87
	Negative	1.76	2.03	2.46

For the phone scenario (see Table 7), the omnibus MANOVA indicated a significant main effect of self-relevance, F (3, 198) = 2.55, p < .05, but the main effect of group and the Group X Self-Relevance interaction was not significant (F (3, 198) = .46 and F (3, 198) = .78, respectively). Univariate analyses for "imagined" ratings showed that individuals receiving the self-relevant phone scenario (M = 2.88, SD = 1.07) imagined themselves in the situation to a greater extent than individuals receiving non-self-relevant scenarios (M = 2.30, SD = 1.27), F (1,200) = 6.13, p < .05.

Individuals receiving self-relevant and non-self-relevant phone scenarios did not differ with respect to ratings about similar experiences having "happened" to them or the degree to which the scenario made them "think" about their own experiences, F (1,200) = .06 and F (1,200) = 1.43, respectively.

Table 7. Mean Self-Relevance Manipulation Check Ratings for the Phone Scenario

		"Similar Situation Happened" Rating M	"Think About Own Experiences" Rating M	"Extent Imagined Self in Situation" Rating M
Group	Outcome			
Dysphoric				
	Positive	1.58	2.77	2.69
	Negative	1.71	2.74	2.52
Nondysphoric				
	Positive	1.74	2.80	2.95
	Negative	1.68	2.38	2.21

Finally, for the school scenario (see Table 8), the omnibus MANOVA revealed a significant main effect of self-relevance, F (3, 198) = 4.91, $p < .05$, while the main effect of group was not significant, F (3, 198) = 1.99, nor was the Group X Self-Relevance interaction significant, F (3, 198) = 1.52. Univariate analyses showed a main effect of self-relevance in which participants receiving self-relevant movie scenarios (M = 3.08, SD = 1.09) rated themselves as having "imagined" themselves in the scenario to a greater extent than participants receiving non-self-relevant movie scenarios (M = 2.31, SD = 1.26), F (1,200) = 13.92, $p < .05$. Furthermore, individuals receiving self-relevant movie scenarios (M = 2.98, SD = 1.14) rated that the scenario made them "think" more about their own real life situations than individuals receiving

non-self-relevant movie scenarios (M = 2.42, SD = 1.24), F (1,200) = 5.11, p < .05. Participants receiving self-relevant and non-self-relevant phone scenarios did not differ with respect to ratings about similar experiences having "happened" to them, F (1,200) = .06, ns.

Table 8. Mean Self-Relevance Manipulation Check Ratings for the School Scenario

		"Similar Situation Happened" Rating M	"Think About Own Experiences" Rating M	"Extent Imagined Self in Situation" Rating M
Group	Outcome			
Dysphoric				
	Positive	1.42	2.92	3.21
	Negative	1.61	2.85	2.79
Nondysphoric				
	Positive	1.44	3.00	3.04
	Negative	1.18	2.23	2.09

These results are consistent with the intended manipulation of the self-relevance variable. For all four scenarios, individuals receiving the self-relevant version reported they imagined themselves in the scenario to a greater extent than individuals receiving the non-self-relevant versions. There were two additional questions assessing the manipulation of self-relevance, one inquiring as to whether a situation like the scenario had ever happened to them and one asking about the extent to which the scenario made them think about similar situations from their own lives. While the results for these two questions were largely not different between participants receiving self-relevant versions of the scenarios and participants receiving non-self-relevant versions of the scenarios, these two questions are related to the life

experiences individuals brought into the experimental setting and may not as amenable to the manipulation checks of the present study.

Hindsight Bias

The hindsight bias analyses focus on the four independent variables used in this study. Group (dysphoric, nondysphoric) was the only between-subject variable. Outcome (positive, negative), self-relevance (self-relevant, non-self-relevant), and time (time 1, time 2) were repeated measures variables. Consequently, each individual participated in each of the following four conditions: (1) self-relevant, positive outcome; (2) self-relevant, negative outcome; (3) non-self-relevant, positive outcome; and (4) non-self-relevant, negative outcome. Furthermore, individuals also participated in both time 1 and time 2. The dependent variable in this study was hindsight bias, which was assessed by examining the difference between time 1 likelihood estimates (which were made without outcome knowledge) and time 2 likelihood estimates (which were made with outcome knowledge). Hindsight bias occurs when an individual makes a greater likelihood estimate with outcome knowedge than he/she did without outcome knowledge, that is, when his/her time 2 likelihood rating is greater than his/her time 1 likelihood rating.

Participants made likelihood ratings for four different scenarios (job, movie, phone, school). Different scenarios were used so that a repeated measures design in which a participant was able to participate in all conditions could be employed. The four scenarios were counterbalanced across the four within-subjects conditions. The hindsight bias results presented in this section collapse across the four scenarios.

A four-way, repeated measures ANOVA was conducted for the within-subject variables of outcome, self-relevance, and time and the between subject variable of group. The four-way interaction was nonsignificant (F (1, 201) = .03, p > .05).

There was a significant three-way interaction between the within-subject variables of self-relevance and time and the between-subject variable of group (F (1, 201) = 4.41, $p < .05$). For self-relevant scenarios (see Figure 1), dysphoric individuals showed higher likelihood ratings at time 2 (M = 41.97, SD =17.48) than time 1 (M = 32.52, SD = 21.06), t (56) = 3.31, $p < .05$, while nondysphoric individuals failed to show a difference between time 2 (M = 32.69, SD = 18.08) and time 1 (M = 29.96, SD = 20.83), t (145) = 1.66, ns. Therefore, dysphorics showed a significant hindsight bias for self-relevant scenarios and nondysphorics did not. For non-self-relevant scenarios (see Figure 2), there was a simple main effect for time. That is, both dysphorics and nondysphorics showed greater likelihood ratings at time 2 (M = 35.68, SD = 18.26) than time 1 (M = 30.16, SD = 18.69), t (203) = 4.97, $p < .001$. Therefore, both dysphoric and nondysphorics showed a significant hindsight bias for non-self-relevant scenarios.

These results are inconsistent with the two competing predictions. Recall that predictions based on the findings of Schkade and Kilbourne (1991) were that dysphorics would show less hindsight bias for negative outcomes and greater hindsight bias for positive outcomes, regardless of self-relevance, as compared to nondysphorics. The prediction from Mark and Mellor's (1991) findings were that dysphorics would show greater hindsight bias for self-relevant scenarios with negative outcomes and less hindsight bias for self-relevant scenarios with positive outcomes, compared to nondysphorics. Both predictions emphasized the importance of outcome as a variable. Here, it was found that self-relevance was the more important variable for dysphorics, however.

Although not relevant directly to hindsight bias (which requires an effect of the time variable), there was a significant Group X Outcome interaction (F (1, 201) =

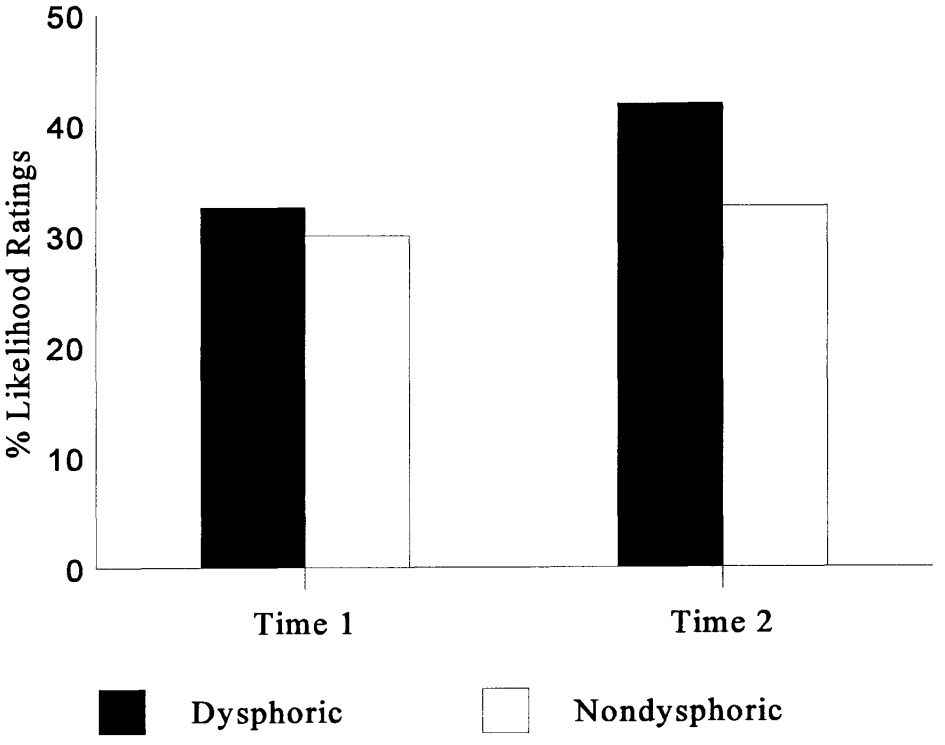

Figure 1. Mean Likelihood ratings for Self-Relevant Scenarios.

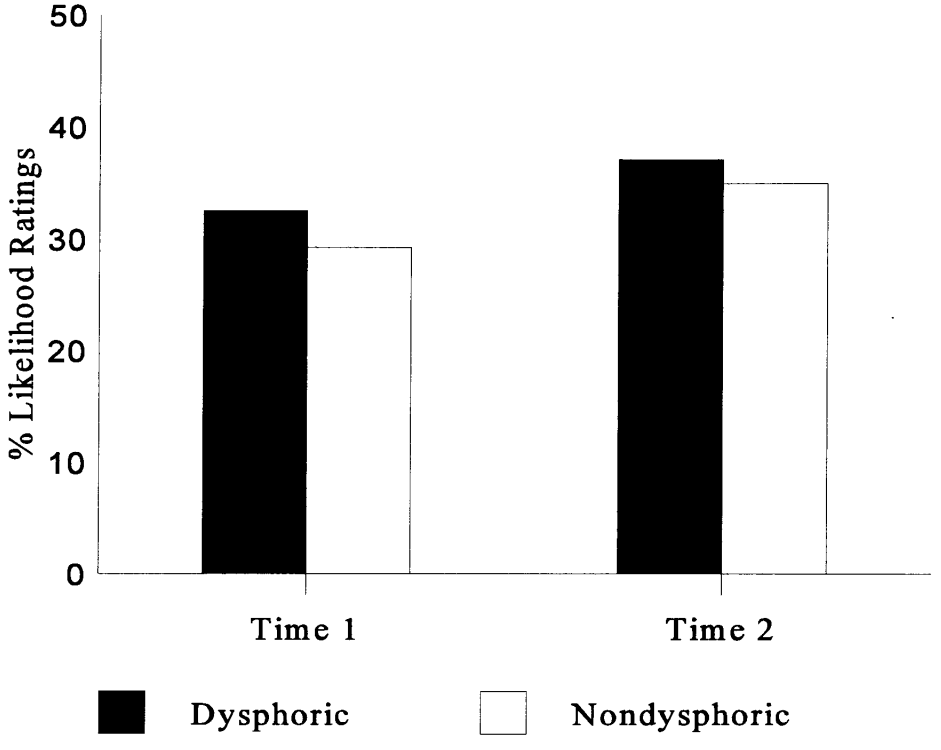

Figure 2. Mean likelihood ratings for Non-Self-Relevant Scenarios.

8.91, $p < 0.5$). For positive outcomes, the likelihood ratings (across time 1 and time 2) of dysphorics ($M = 33.69$, $SD = 17.07$) did not significantly differ from those of non-dysphorics ($M = 34.02$, $SD = 18.96$), t (202) = 0.12, ns. However, for negative outcomes, dysphorics showed higher likelihood ratings ($M = 38.43$, $SD = 16.45$) than did non-dysphorics ratings across time 1 and time 2 ($M = 29.35$, $SD = 15.80$), t (201) = 3.64, $p < .05$.

Finally, there was a significant Outcome X Time interaction (F (1, 201) = 9.30, $p < .05$). For positive outcomes, time 1 likelihood ratings ($M = 33.11$, SD = 21.20) did not significantly differ from time 2 likelihood ratings ($M = 34.75$, SD = 19.35), t (203) = 1.37, ns. For negative outcomes, time 2 ratings ($M = 36.14$, SD = 20.00) were greater than time 1 ratings ($M = 27.66$, $SD = 18.00$), t (202) = 6.33, $p <$ .05. Thus, hindsight bias was observed for all participants for negative outcomes, but not for positive outcomes. One possible explanation for this finding may be that individuals show an optimistic bias at time 1. In other words, negative outcomes may be judged as very unlikely at time 1, while positive outcomes may be seen as more likely. In fact, this was the case as likelihood ratings for negative outcomes (M = 27.78, $SD = 18.03$) at time 1 were significantly lower than likelihood ratings for positive outcomes at time 1 ($M = 33.11$, $SD = 21.20$), t (203) = 3.08, $p < .05$, and likelihood ratings for negative outcomes at time 2 ($M = 36.14$, $SD = 20.00$) did not differ from likelihood ratings for positive outcomes at time 2 ($M = 34.72$, $SD = 19.40$), t (203) = .88, ns. Because hindsight bias occurs when the time 2 likelihood rating is greater than the time 1 likelihood rating, the particularly low time 1 likelihood rating for negative outcomes would be one explanation for the finding of hindsight bias for negative outcomes.

Hindsight bias for each scenario. Given that dysphorics and nondysphorics differed in how "good" and "bad" they perceived positive and negative outcomes for the different scenarios (see Manipulation Check data), scenario was added as a variable in an analysis. A five-way, repeated measures ANOVA was conducted for the within subjects variables of outcome, self-relevance, and time and the between-subjects variables of group and scenario. The five-way interaction showed a trend towards significance, F (1, 199) = 2.54, $p < .10$. Because the scenarios seem important in explaining hindsight bias, it is informative to examine evidence for hindsight bias as a function of each scenario. Consequently, a four-way, repeated measures ANOVA was conducted with the within-subjects variable of Time and the between subjects variables group (dysphoric, nondysphoric), outcome (positive, negative), and self-relevance (self-relevant, non-self-relevant) for each of the four scenarios (job, movie, phone, school). The results of these analyses indicate that hindsight differed in different scenarios.

For the job scenario, the Group X Outcome X Self-Relevance X Time interaction was not significant (F (1, 196) = .43, ns.). There was a trend toward a significant three-way Group X Self-Relevance X Time interaction (F (1, 196) = 3.52, $p < .10$). For self-relevant scenarios, nondysphorics showed a trend towards having time 2 likelihood ratings (M = 31.36, SD = 24.20) greater than time 1 ratings (M = 27.20, SD = 25.81), t (69) = 1.71, $p < .10$. Dysphorics had greater likelihood ratings at time 2 (M = 44.68, SD = 22.25) than at time 1 (M = 26.45, SD = 20.44) for self-relevant scenarios as well, t (30) = 3.73, $p < .001$. For non-self-relevant scenarios, nondysphoric individuals showed greater time 2 (M = 32.30, SD = 21.22) likelihood ratings than time 1 ratings (M = 23.48, SD = 24.01), t (76) = 3.66, $p < .05$. Dysphorics also showed greater time 2 likelihood ratings (M = 38.88, SD = 23.44) as compared to

time 1 ratings (M = 27.31, SD = 24.87), t (25) = 2.74, p < .05. Thus, both dysphorics and nondysphorics showed hindsight bias for self-relevant and non-self-relevant scenarios when reading the job scenario.

There was also a trend toward a significant Group X Outcome X Time interaction for the job scenario, F (1, 196) = 2.78, p < .10. For positive outcomes, dysphorics showed greater likelihood ratings at time 2 (M = 47.60, SD = 20.06) than time 1 (M = 32.20, SD = 23.94), t (24) = 2.86, p < .05, while nondysphorics did not differ between time 2 (M = 33.81, SD = 23.69) and time 1 (M = 31.83, SD = 28.26) likelihood ratings, t (79) = .83, ns. For negative outcomes, however, nondysphorics showed greater time 2 likelihood ratings (M = 29.51, SD = 21.21) as compared to time 1 ratings(M = 17.40, SD = 16.08), t (66) = 5.33, p < .05. Similarly, dysphorics also showed greater likelihood ratings at time 2 (M = 37.69, SD = 24.11) than at time 1(M = 22.66, SD = 20.46), t (31) = 3.64, p < .05. Therefore, for the job scenario, dysphorics showed hindsight bias for both positive and negative outcomes, while nondysphorics showed hindsight bias only for negative outcomes.

Although not relevant directly to hindsight bias because the time effect was not included, there were two between-subject effects for the job scenario. First, there was a significant main effect of outcome, F (1, 196) = 10.01, p < .05. Positive outcomes (M = 34.51, SD = 22.54) for the job scenario were rated as more likely than negative outcomes (M = 25.63, SD = 17.47). Second, there was a trend towards a significant main effect of group, F (1, 196) = 3.59, p < .10. Nondsyphorics (M = 28.55, SD = 21.19) showed lower likelihood ratings than dysphorics (M = 34.44, SD = 18.88).

The Group X Outcome X Self-Relevance X Time interaction was not significant for the movie scenario, F (1, 196) = .10, ns. There was a significant Group X Self-Relevance X Time interaction (F(1, 196) = 3.88, p < .05). For self-relevant

scenarios, the time 1 likelihood ratings of nondysphorics (M = 38.04, SD = 26.88) did not differ from the time 2 ratings (M = 36.80, SD = 21.30), t (75) = .40, ns. Similarly, the time 1 likelihood ratings (M = 38.91, SD = 27.88) of dysphorics did not differ from their time 2 ratings (M = 46.47, SD = 22.78), t (33) = 1.48, ns. For non-self-relevant scenarios, nondysphorics did not differ with respect to time 1 (M = 42.76, SD = 25.12) and time 2 (M = 40.25, SD = 23.34) likelihood ratings, t (70) = .90, ns. Dysphorics, on the other hand, showed a trend towards having greater time 1 ratings (M = 41.61, SD = 29.20) than time 2 ratings (M = 32.87. SD = 24.59) for non-self-relevant scenarios, t (22) = 1.83, p < .10. Thus, dysphorics showed a trend towards reverse hindsight bias for non-self-relevant movie scenarios.

There was also a significant Self-Relevance X Time interaction for the movie scenario, F (1, 196) = 4.70, p < .05. For self-relevant scenarios, time 1 (M = 38.31, SD = 27.07) and time 2 (M = 39.79, SD = 22.12) likelihood ratings did not differ, t (109) = .56, ns. For non-self-relevant scenarios, there was a trend towards significance as time 1 likelihood ratings (M = 42.48, SD = 26.02) were greater than time 2 ratings (M = 38.45, SD = 23.74) , t (93) = 1.67, p < .10. Therefore, for the movie scenario, self-relevant scenarios did not show hindsight bias, while non-self-relevant scenarios showed a trend towards reverse hindsight bias as time 2 likelihood ratings were lower than time 1 ratings.

There were also some between-subject effects for the movie scenario. Again, because these effects do not included the time variable, they would not be directly related to hindsight bias. There was a significant Group X Outcome interaction, F (1, 196) = 5.35, p < .05. For positive outcomes, dysphorics (M = 35.36, SD = 21.30) and nondysphorics (M = 40.43, SD = 21.33) did not differ with respect to likelihood ratings, t (97) = 1.11, ns. However, for negative outcomes, dysphorics (M = 47.06, SD

= 22.05) showed a trend towards higher likelihood ratings than nondysphorics (M = 38.52, SD = 20.36), t (1.79) = 1.79, p < .10.

Results were different for the phone scenario. Like the other two scenarios previously discussed, the Group X Outcome X Self-Relevance X Time interaction was not significant, F (1, 196) = .05, ns. For the phone scenario, there was a significant Outcome X Time interaction, F (1, 196) = 12.73, p < .05. Here, time 1 likelihood ratings (M = 41.37, SD = 31.02) were greater than time 2 likelihood ratings (M = 35.25, SD = 25.35) for positive outcomes, t (104) = 2.44, p < .05. However, for negative outcomes, time 2 likelihood ratings (M = 43.86, SD = 25.54) were greater than time 1 likelihood ratings (M = 32.98, SD = 25.22), t (99) = 3.44, p < .05. Thus, hindsight bias occurred for negative outcomes. For positive outcomes, reverse hindsight bias occurred as individuals rated the outcome as less likely to have occurred after gaining knowledge that it had occurred.

The phone scenario had one between-subjects effect, which was a Group X Outcome interaction, F (1, 196) = 6.11, p < .05. Nondysphorics (M = 39.65, SD = 24.87) did not differ from dysphorics (M = 34.02, SD = 26.42) in likelihood ratings for positive outcomes, t (103) = .97, ns. Yet, dysphorics (M = 46.44, SD = 21.64) showed higher likelihood ratings than nondysphorics (M = 34.59, SD = 18.00) for negative outcomes, t (97) = 2.87, p < .05.

The Group X Outcome X Self-Relevance X Time interaction for the school scenario was not significant, F (1, 195) = .66, ns. There was significant main effect of time, F (1, 195) = 38.03, p < .05. Likelihood ratings at time 2 (M = 28.70, SD = 24.18) were greater than likelihood ratings at time 1 (M = 18.48, SD = 21.13) regardless of group, outcome, and self-relevance, t (202) = 7.10, p < .05. Thus, there

was a hindsight bias found for the school scenario and it was uninfluenced by group, outcome, and self-relevance.

For the school scenario, there was also a between-subjects effect. Here, there was a main effect of group, F (1, 195) = 3.99, $p < .05$. Dysphorics (M = 28.32, SD = 20.72) showed greater likelihood ratings than nondysphorics (M = 21.74, SD = 19.85).

CHAPTER IV

DISCUSSION

The findings here did not support either of the two predictions made on the basis of previous research. Predictions based on the work of Schkade and Kilbourne (1991) were that dysphorics would show greater hindsight bias for positive outcomes and less hindsight bias for negative outcomes, as compared with nondysphorics. Predictions from the findings of Mark and Mellor (1991) were that dysphorics would show greater hindsight bias for self-relevant scenarios with negative outcomes and less hindsight bias for self-relevant scenarios with positive outcomes, compared to nondysphorics. Although both sets of predictions stress the importance of outcome with different effects for dysphoric and nondysphoric individuals, the results did not support this view.

Thus, dysphorics were not shown to differ with respect to hindsight bias between positive and negative outcomes. This idea that dysphorics show consistent judgments across varying outcomes supports evidence for an "even-handed" view of depression. The "even-handed" notion has been studied in the area of attributional style and depression.

The responses of depressed and nondepressed individuals have been studied with respect to positive and negative outcomes in many situations (e.g., Cohen, Van de Bout, Van Vliet, & Kramer, 1989; Sweeney et al., 1986). There are typically three attributional styles that characterize individuals' responses to positive and negative outcomes (Cohen et al., 1989). First, the self-serving bias attributional style is typified

by internal attributions to positive outcomes and external attributions to negative outcomes. Therefore, self-serving individuals tend to blame outside factors for negative outcomes and credit themselves for positive outcomes. Second, the counter-self-serving bias is just the opposite; here, individuals make internal attributions for negative outcomes and external attributions to positive outcomes. In other words, they give credit to outside factors for successes and blame themselves for failures. Finally, the even-handed attributional style is characterized by making roughly equivalent attributions to both internal and external factors for both positive and negative outcomes. Therefore, "even-handed" individuals tend to attribute both successes and failures partly to themselves and partly to outside factors (Cohen et al., 1989).

These different types of attributional styles have been related to differences in depression (Cohen et al., 1989). Depression has been associated with the counter-self-serving bias, while nondepressed individuals have been found to exhibit the self-serving bias (Abramson et al., 1978; Cohen et al., 1989; Rizley, 1978; Sweeney et al., 1986). Thus, previous research has found that depressed individuals tend to attribute negative outcomes to themselves while attributing positive outcomes to external factors and nondepressed individuals tend to attribute positive outcomes to themselves and negative outcomes to external factors.

However, some studies have associated depression with the even-handed attributional style (Alloy & Abramson, 1988; Golin, Terrel, Weitz, & Drost, 1979; Lewinsohn, Mischel, Chaplin, & Barton, 1980; Raps, Peterson, Reinhard, Abramson, & Seligman, 1982). These findings, then, have seen depressed individuals as making roughly similar attributions for both positive and negative outcomes.

The present study supports the even-handed view of dysphoria. This idea that dysphorics show consistent judgments across varying outcomes supports evidence for

an "even-handed" view of depression. In other words, this lack of difference in response to positive and negative outcomes is consistent with the notion that dysphoria is not associated with differential responses to positive and negative outcomes, as would be expected from the counter-self-serving bias. Rather, the similar responses to different outcomes is consistent with the idea of depressive even-handedness.

Much of the research studying depressive evenhandedness has used samples of college students, as in the present study. There has been some concern about the appropriateness of using self-reported distress in college students as an analog for diagnosable depression (Coyne, 1994). Distress in college students tends to differ from depression because it is typically milder and more transient, and tends to have stronger correlates with common psychological and social factors (Coyne, 1994). Therefore, the findings of depressive even-handedness may be a function of the sample. That is, even-handedness may occur with dysphorics and not clinically diagnosed depressives.

Previous hindsight bias research has commented on the relation of hindsight bias to attributions. In discussing their finding of a lack of hindsight bias for a self-relevant negative outcome, Mark and Mellor (1991) mention that one's tendency to avoid blame for negative outcomes was responsible for the reduction in hindsight bias. In other words, to show hindsight bias for a self-relevant, negative outcome and acknowledge that one foresaw such an outcome woud be to imply that one did nothing to prevent the undesirable outcome. Therefore, this notion suggests that hindsight bias is related to internal attributions.

While this area of hindsight bias and attributions has been studied before, this is an area in need of further research. Prior studies have shown that causal inferences can mediate hindsight bias (Roese & Olson, 1996; Wasserman, Lempert, & Hastie,

1991). Future studies may specifically examine hindsight bias and attributions for depressed and nondepressed individuals for both positive and negative outcomes. It seems that the manipulation of attributional style, such that individuals are led to make either internal or external attributions, would be particularly useful in understanding the relationship among these variables.

While the outcome variable failed to distinguish the dysphoric and nondysphoric groups in terms of hindsight bias, the self-relevance variable did. The present study found that the group, self-relevance, and time variables interacted to influence participants' likelihood judgments. While both groups showed hindsight bias for non-self-relevant scenarios, nondysphorics "lost" their hindsight bias for self-relevant scenarios.

The result that self-relevance was an important variable in distinguishing dysphoric and nondysphoric groups is also consistent with previous research in the area of depression and self-relevance. Numerous studies have associated depression with increased memory for negative self-relevant information (e.g., Bower, 1981; Kuiper, Perry, & MacDonald, 1981; Pyszczynski, Holt, & Greenberg, 1987). Further, when it comes to non-self-relevant information, depressed individuals fail to distinguish themselves from nondepressed individuals. The findings of the present study would support this idea, as dysphorics and nondysphorics did not differ with respect to non-self-relevant scenarios.

However, while the association found in the present study between dysphoria and self-relevance seems consistent with prior research, it also shows some inconsistencies. As just described, prior work has found that this relationship between dysphoria and self-relevance is typically limited to negative information (e.g., Bower, 1981; Kuiper et al., 1981; Pyszczynski et al., 1987). Because the results presented

here show that the association between dysphoria and self-relevance occurs across positive and negative information, the results are not entirely consistent with previous research.

This study also found that both dysphoric and nondysphoric individuals did not show hindsight bias for positive outcomes, but did so for negative outcomes. Here, an important element was the low likelihood estimates for negative outcomes individuals made without outcome knowledge at time 1. In other words, participants showed an optimistic bias such that they did not initially view negative outcomes as very likely. Because hindsight bias occurs when the time 2 likelihood rating is greater than the time 1 rating, these particularly low initial estimates for negative outcomes are important in the observation of hindsight bias for negative outcomes.

Another finding of the present study was the way in which hindsight bias differed across the four different scenarios. Because some analyses collapsed across these four scenarios, it is likely that a great amount of error was introduced into the analyses. This can be seen by the large standard deviations for likelihood estimates at time 1 and time 2. The fact that hindsight bias differed with respect to its relations to other variables studied across situations certainly contributed to the difficulty in obtaining results consistent with the two predictions based on previous research.

In light of the differences in hindsight bias among the four different scenarios, another finding of the present study is the apparent context-specificity of hindsight bias. Previous reviews of the hindsight bias literature have commented on the robustness of the effect (Christensen-Szalanski & Willham, 199; Hawkins & Hastie, 1990). Hindsight bias has been found in laboratory studies using both trivia questions and hypothetical scenarios. It has also been found for a wide variety of real-world events as well (e.g., Bryant & Brockway, 1997). The results presented here showed

that hindsight bias was found overall, but the nature of the hindsight bias observed differed for each of the individual scenarios.

While hindsight bias may be a robust effect, its characteristics may differ in various situations. In a meta-analysis of hindsight bias studies, Christensen-Szalanski & Willham (1991) found that there were differences in the effect size of hindsight bias between studies according to the stimuli used. In fact, studies using trivia questions had an effect size over three times greater than studies using case histories (Christensen-Szalanski & Willham, 1991). Furthermore, the large number of studies which have observed effects for moderating variables on hindsight bias (e.g., Carli & Leonard, 1989; Christensen-Szalawski & Willham, 1991; Janoff-Bulman et al., 1985; Mark & Mellor, 1991; Mazursky & Ofir, 1990; Schkade & Kilbourne, 1991; Verplanken & Pieters, 1988; Walster, 1967) would also support a context-specific view of this phenomenon .

Because hindsight bias is likely to be context-specific, further research should attempt to look at the effects of hindsight bias in different contexts within studies. Although some studies have included multiple contexts and multiple situations (e.g., Agans & Shaffer, 1994; Davies, 1993; Fischoff, 1977; Schkade & Kilbourne, 1991), there have also been many which have focused on a single event (Campbell & Tesser, 1983; Mark & Mellor, 1991; Pennington et al., 1980). Of these studies which included multiple stimuli, many did not report whether different findings were observed for the different stimuli (Davies, 1993; Fischoff, 1977; Schkade & Kilbourne, 1991). Further, because different stimuli may have been used under slightly different experimental methods, it is also difficult to determine whether or not this group of studies would support the notion of context specificity for hindsight bias.

One of the studies which used different scenarios did report an effect of these scenarios (Agans & Shaffer, 1994). This study sought to determine if the hindsight bias occurs due to an availability heuristic, and used the context of different types of misfortune. There was also a slight difference in method as individuals with outcome knowledge were asked not to ignore the given outcome. "Rather they were asked to judge the probability that the given mishap would occur for a person who was similar to the victim" (Agans & Shaffer, 1994, p. 442). Thus, hindsight estimates might reflect individuals' use of the availability heuristic. That is, individuals with outcome knowledge may have more difficulty surpressing the availability heuristic.

Agans and Shaffer (1994) found that hindsight conditions did activate the availability heuristic. Furthermore, hindsight estimates differed among the three types of misfortunes used (disease, accidents, and homicide). Because individuals' perceptions of the risks of these three types of misfortunes are opposite to the observed order determined from actuarial data, the difference in hindsight estimates was attributed to the availability heuristic. Consequently, the authors argued that "the availability heuristic appears to be a variable that guides the hindsight bias" (Agans & Shaffer, 1994, p. 447). It is possible that there could be a similar explanation for the differences in hindsight bias for the scenarios presented in this study; perhaps the perceptions of individuals regarding various elements in the different scenarios and outcomes differed, and may have led to the observed differences among the four hypothetical scenarios.

The findings here suggest that looking at hindsight bias in just a single circumstance or for just a single event may bias the findings that are observed. Consequently, it becomes difficult to compare findings among different studies because they are likely to differ in the contexts in which hindsight bias was examined.

For example, the present study examined hindsight bias in a hypothetical job situation and a prior study used a real-world job situation (Mark & Mellor, 1991). Yet it is difficult to compare directly these two studies because they differ in a couple of ways. First, the current study included both positive and negative outcomes to the hypothetical job situation, while the prior study examined hindsight bias for a only negative outcome, a job lay-off. Secondly, there is the obvious difference between imagining oneself losing his or her job in a hypothetical situation and an actual job loss.

This study also included another scenario which depicted a situation similar to a real-life event used in a prior hindsight bias study; the school scenario used in the present study involved the estimation of exam grades, just as a previous study examined dysphoria and hindsight bias on test performance (Haslam & Jayasinghe, 1995). Unfortunately, the context-specific view of hindsight bias supported by the results of the present study suggests that the findings of these two studies are difficult to compare because the two studies differ in several important ways. First, the present study used hypothetical scenarios while the previous study used performance on a test as the event for which to examine hindsight bias. Also, the present study used numeric likelihood ratings to assess hindsight bias while the previous study simply used the ordinal pattern of predicted and actual test performance. Finally, the present study used a more rigid criterion to classify individuals as dysphoric, as compared to the latter study. It seems that any of these differences could explain the differences in results between the two studies, particularly in light of the idea that hindsight bias is context specific.

In conclusion, this study had several findings. First, outcome was not found to be an important variable in explaining differences in hindsight bias, as was expected.

This idea, that dysphorics showed similar judgments across both positive and negative outcomes, is consistent with the "even-handed" view of depression from attributional theory. Additionally, self-relevance was important in explaining differences in hindsight bias. This finding is consistent with previous research associating self-relevance to depression. However, the present findings were also inconsistent with this previous work, as both dsyphorics and nondysphorics showed hindsight bias for non-self-relevant scenarios.

Another major finding of this study was the differences in hindsight bias across the different types of scenarios. It seems that hindsight bias can be context-specific. Analyses collapsing across the different scenarios had large amounts of error introduced because of this. Thus, such analyses may be limited by the apparent context-specificity of hindsight bias. This context-specific view of hindsight bias makes it difficult to compare the results of hindsight bias studies because they are likely to differ with respect to the contexts in which hindsight bias was examined.

APPENDIX A
Hypothetical Scenarios

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For almost six months, you have been working evenings and weekends to help make a little extra spending money. Over this time, you have had an excellent record of attendance at work; you have rarely been late and have never failed to show up when scheduled.

Your boss would like to give you a position with more responsibility. He explains that he is going to give you a larger and more important assignment on which to work and see how you do.

During the several days while you are working on the new assignment, you happen to be late to work because of car trouble. On another day, you have to admit to you boss that you forgot the work you had done at home.

****

Below, you will find several possible outcomes for this scenario. Please read each and answer the questions regarding how probable each outcome is.

1. Your boss decides to give you another chance to show your hard work on another important assignment.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

2. You are fired.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

3. You are asked to return to your original position at work.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

4. You bring in your work on the following day and your boss is so impressed with it that he decides to promote you to the higher position.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

5. You bring in your work on the following day and your boss feels you are not ready for the promotion yet.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

As you read the following scenario, form a mental image of Jane in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For almost six months, Jane has been working evenings and weekends to help make a little extra spending money. Over this time, she has had an excellent record of attendance at work; she has rarely been late and has never failed to show up when scheduled.

Jane's boss would like to give her a position with more responsibility. He explains that he is going to give her a larger and more important assignment on which to work and see how she does.

During the several days while she is working on the new assignment, Jane happens to be late to work because of car trouble. On another day, she has to admit to her boss that she forgot the work she had done at home.

****

Below, you will find several possible outcomes for this scenario. Please read each and answer the questions regarding how probable each outcome is.

1. Jane's boss decides to give her another chance to show her hard work on another important assignment.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

2. Jane is fired.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

3. Jane is asked to return to her original position at work.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

4. Jane brings in her work on the following day and her boss is so impressed with it that he decides to promote her to the higher position.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

5. Jane brings in her work on the following day and her boss feels she is not ready for the promotion yet.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For almost six months, you have been working evenings and weekends to help make a little extra spending money. Over this time, you have had an excellent record of attendance at work; you have rarely been late and have never failed to show up when scheduled.

Your boss would like to give you a position with more responsibility. He explains that he is going to give you a larger and more important assignment on which to work and see how you do.

During the several days while you are working on the new assignment, you happen to be late to work because of car trouble. On another day, you have to admit to you boss that you forgot the work you had done at home.

You bring in your work on the following day and your boss is so impressed with it that he decides to promote you to the higher position.

****

What would you do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that you would get the promotion?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. You bring in your work on the following day and your boss is so impressed with it that he decides to promote you to the higher position.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. Your boss decides to give you another chance to show your hard work on another important assignment.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. You are fired.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

8. To what extent was this outcome due to factors other than you, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For almost six months, you have been working evenings and weekends to help make a little extra spending money. Over this time, you have had an excellent record of attendance at work; you have rarely been late and have never failed to show up when scheduled.

Your boss would like to give you a position with more responsibility. He explains that he is going to give you a larger and more important assignment on which to work and see how you do.

During the several days while you are working on the new assignment, you happen to be late to work because of car trouble. On another day, you have to admit to you boss that you forgot the work you had done at home.

You are fired.

****

What would you do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that you would get fired?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. You are fired.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. Your boss decides to give you another chance to show your hard work on another important assignment.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. You bring in your work on the following day and your boss is so impressed with it that he decides to promote you to the higher position.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about my own job responsibilities.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to you or your personal characteristics?

0	1	2	3	4
not at all due you				totally due to you

(continued)

8. To what extent was this outcome due to factors other than you, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of Jane in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For almost six months, Jane has been working evenings and weekends to help make a little extra spending money. Over this time, she has had an excellent record of attendance at work; she has rarely been late and has never failed to show up when scheduled.

Jane's boss would like to give her a position with more responsibility. He explains that he is going to give her a larger and more important assignment on which to work and see how she does.

During the several days while she is working on the new assignment, Jane happens to be late to work because of car trouble. On another day, she has to admit to her boss that she forgot the work she had done at home.

Jane brings in her work on the following day and her boss is so impressed with it that he decides to promote her to the higher position.

****

What would Jane do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that Jane would get the promotion?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. Jane brings in her work on the following day and her boss is so impressed with it that he decides to promote her to the higher position.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. Jane's boss decides to give her another chance to show her hard work on another important assignment.Jane is fired.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. Jane is fired.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about my own job responsibilities.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to Jane or her personal characteristics?

0	1	2	3	4
not at all due Jane				totally due to Jane

(continued)

8. To what extent was this outcome due to factors other than Jane, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of Jane in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For almost six months, Jane has been working evenings and weekends to help make a little extra spending money. Over this time, she has had an excellent record of attendance at work; she has rarely been late and has never failed to show up when scheduled.

Jane's boss would like to give her a position with more responsibility. He explains that he is going to give her a larger and more important assignment on which to work and see how she does.

During the several days while she is working on the new assignment, Jane happens to be late to work because of car trouble. On another day, she has to admit to her boss that she forgot the work she had done at home.

Jane is fired.

****

What would Jane do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that Jane would get fired?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. Jane is fired.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. Jane's boss decides to give her another chance to show her hard work on another important assignment.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. Jane brings in her work on the following day and her boss is so impressed with it that he decides to promote her to the higher position.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about my own job responsibilities.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to Jane or her personal characteristics?

0	1	2	3	4
not at all due Jane				totally due to Jane

(continued)

8. To what extent was this outcome due to factors other than Jane, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For your first date, you and a friend planned a trip to the movies. The movie you want to see is only playing at one theater, to which you have never been. As you leave to pick up your date and go to the theater, you notice that it is later than you thought. In fact, the movie starts in 30 minutes.

You are not sure if you will make it to the theater in time to see the beginning of the movie. You hope your date will be ready when you arrive to pick him/her up, but since this is your first date, you aren't sure if he/she will be. Also, since you have never been to this theater, you are not exactly sure how long it will take to get there. In fact, there is a chance that you may get lost or that traffic may be heavy.

Even if you get to the theater on time, you are unsure of the parking situation, so you may have to spend time searching for a parking spot. You hope that this movie theater is one that plays several previews before the featured movie, so that even if you are running a little late, you will miss only the preview and not the featured movie. But, since you have never been there before, you do not know how many previews the theater plays and, thus, how long the movie might be delayed.

****

Below, you will find several possible outcomes for this scenario. Please read each and answer the questions regarding how probable each outcome is.

1. You and your date get to the theater late enough that you miss some of the beginning of the movie you wanted to see, but you are in time to see a different movie, which is agreeable to both you and your friend.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

2. You and your date get to the theater late, missing 35 minutes of the feature movie.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

3. You and your date get to the theater a little late, missing all the previews but seeing all of the feature movie.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

4. You and your date get to the theater a little late, missing the first 5-10 minutes of the feature movie.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

5. You and your date don't run into any complications and get to the theater in time to see all of the previews and all of the feature movie.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

As you read the following scenario, form a mental image of Chris in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For their first date, Chris and a friend planned a trip to the movies. The movie he wants to see is only playing at one theater, to which he has never been. As Chris leaves to pick up his date and go to the theater, he notices that it is later than he thought. In fact, the movie starts in 30 minutes.

Chris is not sure if he will make it to the theater in time to see the beginning of the movie. He hopes his date will be ready when he gets to her house, but he knows that his date has a tendency to be running late. Also, since he has never been to this theater, Chris is not exactly sure how long it will take to get there. In fact, there is a chance that he may get lost or that traffic may be heavy.

Even if they get to the theater on time, Chris is unsure of the parking situation, so he may have to spend time searching for a parking spot. He hopes that this movie theater is one that plays several previews before the featured movie, so that even if they are running a little late, they will miss only the preview and not the featured movie. But, since Chris has never been there before, he does not know how many previews the theater plays and, thus, how long the movie might be delayed.

****

Below, you will find several possible outcomes for this scenario. Please read each and answer the questions regarding how probable each outcome is.

1. Chris and his date get to the theater late enough that they miss some of the beginning of the movie they wanted to see, but they are in time to see a different movie, which is agreeable to both Chris and his friend.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

2. Chris and his date get to the theater late, missing 35 minutes of the feature movie.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

3. Chris and his date get to the theater a little late, missing all the previews but seeing all of the feature movie.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

4. Chris and his date get to the theater a little late, missing the first 5-10 minutes of the feature movie.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

5. Chris and his date don't run into any complications and get to the theater in time to see all of the previews and all of the feature movie.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For your first date, you and a friend plan a trip to the movies. The movie you want to see is only playing at one theater, to which you have never been. As you leave to pick up your date and go to the theater, you notice that it is later than you thought. In fact, the movie starts in 30 minutes.

You are not sure if you will make it to the theater in time to see the beginning of the movie. You hope your date will be ready when you arrive to pick him/her up, but since this is your first date, you aren' sure if he/she will be. Also, since you have never been to this theater, you are not exactly sure how long it will take to get there. In fact, there is a chance that you may get lost or that traffic may be heavy.

Even if you get to the theater on time, you are unsure of the parking situation, so you may have to spend time searching for a parking spot. You hope that this movie theater is one that plays several previews before the featured movie, so that even if you are running a little late, you will miss only the preview and not the featured movie. But, since you have never been there before, you do not know how many previews the theater plays and, thus, how long the movie might be delayed.

You and your date don't run into any complications and get to the theater in time to see all of the previews and all of the feature movie.

****

What would you do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that you and your date would get to the movie on time?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. You and your date don't run into any complications and get to the theater in time to see all of the previews and all of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. You and your date get to the theater a little late, missing the first 5-10 minutes of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. You and your date get to the theater late, missing 35 minutes of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about dates I have been on.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to you or your personal characteristics?

0	1	2	3	4
not at all due you				totally due to you

(continued)

8. To what extent was this outcome due to factors other than you, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For your first date, you and a friend planned a trip to the movies. The movie you want to see is only playing at one theater, to which you have never been. As you leave to pick up your date and go to the theater, you notice that it is later than you thought. In fact, the movie starts in 30 minutes.

You are not sure if you will make it to the theater in time to see the beginning of the movie. You hope your date will be ready when you arrive to pick him/her up, but since this is your first date, you aren't sure if he/she will be. Also, since you have never been to this theater, you are not exactly sure how long it will take to get there. In fact, there is a chance that you may get lost or that traffic may be heavy.

Even if you get to the theater on time, you are unsure of the parking situation, so you may have to spend time searching for a parking spot. You hope that this movie theater is one that plays several previews before the featured movie, so that even if you are running a little late, you will miss only the preview and not the featured movie. But, since you have never been there before, you do not know how many previews the theater plays and, thus, how long the movie might be delayed.

You and your date get to the theater late, missing 35 minutes of the feature movie.

****

What would you do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that you and your date would get to the movie 35 minutes late?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. You and your date get to the theater late, missing 35 minutes of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. You and your date get to the theater a little late, missing the first 5-10 minutes of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. You and your date don't run into any complications and get to the theater in time to see all of the previews and all of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about dates I have been on.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to you or your personal characteristics?

0	1	2	3	4
not at all due you				totally due to you

(continued)

8. To what extent was this outcome due to factors other than you, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of Chris in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For their first date, Chris and a friend planned a trip to the movies. The movie he wants to see is only playing at one theater, to which he has never been. As Chris leaves to pick up his date and go to the theater, he notices that it is later than he thought. In fact, the movie starts in 30 minutes.

Chris is not sure if he will make it to the theater in time to see the beginning of the movie. He hopes his date will be ready when he gets to her house, but he knows that his date has a tendency to be running late. Also, since he has never been to this theater, Chris is not exactly sure how long it will take to get there. In fact, there is a chance that he may get lost or that traffic may be heavy.

Even if they get to the theater on time, Chris is unsure of the parking situation, so he may have to spend time searching for a parking spot. He hopes that this movie theater is one that plays several previews before the featured movie, so that even if they are running a little late, they will miss only the preview and not the featured movie. But, since Chris has never been there before, he does not know how many previews the theater plays and, thus, how long the movie might be delayed.

Chris and his date don't run into any complications and get to the theater in time to see all of the previews and all of the feature movie.

****

What would Chris do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that Chris and his date would get to the movie on time?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. Chris and his date don't run into any complications and get to the theater in time to see all of the previews and all of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. Chris and his date get to the theater a little late, missing the first 5-10 minutes of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. Chris and his date get to the theater late, missing 35 minutes of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about dates I have been on.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to Chris or his personal characteristics?

0	1	2	3	4
not at all due Chris				totally due to Chris

(continued)

8. To what extent was this outcome due to factors other than Chris, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of Chris in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

For their first date, Chris and his friend plan a trip to the movies. The movie he wants to see is only playing at one theater, to which he has never been. As Chris leaves to pick up his date and go to the theater, he notices that it is later than he thought. In fact, the movie starts in 30 minutes.

Chris is not sure if he will make it to the theater in time to see the beginning of the movie. He hopes his date will be ready when he gets to her house, but he knows that she has a tendency to be running late. Also, since he has never been to this theater, Chris is not exactly sure how long it will take to get there. In fact, there is a chance that he may get lost or that traffic may be heavy.

Even if they get to the theater on time, Chris is unsure of the parking situation, so he may have to spend time searching for a parking spot. He hopes that this movie theater is one that plays several previews before the featured movie, so that even if they are running a little late, they will miss only the preview and not the featured movie. But, since Chris has never been there before, he does not know how many previews the theater plays and, thus, how long the movie might be delayed.

Chris and his date get to the theater late, missing 35 minutes of the feature movie.

****

What would Chris do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that Chris and his date would get to the movie 35 minutes late?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. Chris and his date get to the theater late, missing 35 minutes of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. Chris and his date get to the theater a little late, missing the first 5-10 minutes of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. Chris and his date don't run into any complications and get to the theater in time to see all of the previews and all of the feature movie.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about dates I have been on.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to Chris or his personal characteristics?

0	1	2	3	4
not at all due Chris				totally due to Chris

(continued)

8. To what extent was this outcome due to factors other than Chris, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

You are sitting in your room comfortably, thinking about weekend plans. You decide to call a friend to include in your plans. Your friend answers and is pleased to hear from you. The two of you discuss what each of you has been up to since last you spoke.

You also exchange some news about mutual friends. You're enjoying the conversation and are getting excited about the weekend. Your friend also seems interested in getting together, so you discuss some plans for the weekend. You mention meeting Saturday night in your neighborhood, which has a lot of fun places where the two of you could go.

****

Below, you will find several possible outcomes for this scenario. Please read each and answer the questions regarding how probable each outcome is.

1. You end the conversation by agreeing on an exact time and place in your neighborhood where you'll meet.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

2. Your friend agrees to call you tomorrow to make more definite plans for the weekend. You do not hear back from your friend before the weekend arrives. You're not sure about the weekend plans and whether you should phone back.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

3. You hear a click on the phone. Your friend announces that another call came in and asks you to wait for a minute. After several long minutes you decide to hang up and are not sure whether you should phone again.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

4. Your friend remembers that another friend won four free tickets for a big weekend concert and asks whether you want to go too.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

As you read the following scenario, form a mental image of Joe in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

Joe is sitting in his room comfortably, thinking about weekend plans. He decides to call a friend to include in his plans. His friend answers and is pleased to hear from him. The two of them discuss what each has been up to since last they spoke.

They also exchange some news about mutual friends. Joe is enjoying the conversation and is getting excited about the weekend. Joe's friend also seems interested in getting together, so they discuss some plans for the weekend. Joe mentions meeting Saturday night in his neighborhood, which has a lot of fun places where the two of them could go.

Below, you will find several possible outcomes for this scenario. Please read each and answer the questions regarding how probable each outcome is.

1. Joe ends the conversation by agreeing on an exact time and place in his neighborhood to meet his friend.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

2. Joe's friend agrees to call him tomorrow to make more definite plans for the weekend. Joe does not hear back from his friend before the weekend arrives. He is not sure about the weekend plans and whether he should phone back.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

3. Joe hears a click on the phone. Joe's friend announces that another call came in and asks him to wait for a minute. After several long minutes Joe decides to hang up and is not sure whether he should phone again.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

4. Joe's friend remembers that another friend won four free tickets for a big weekend concert and asks whether he wants to go too.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

You are sitting in your room comfortably, thinking about weekend plans. You decide to call a friend to include in your plans. Your friend answers and is pleased to hear from you. The two of you discuss what each of you has been up to since last you spoke.

You also exchange some news about mutual friends. You're enjoying the conversation and are getting excited about the weekend. Your friend also seems interested in getting together, so you discuss some plans for the weekend. You mention meeting Saturday night in your neighborhood, which has a lot of fun places where the two of you could go.

Your friend remembers that another friend won four free tickets for a big weekend concert and asks whether you want to go too.

****

What would you do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that you would get invited to the concert?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. Your friend remembers that another friend won four free tickets for a big weekend concert and asks whether you want to go too.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. You end the conversation by agreeing on an exact time and place in your neighborhood where you'll meet.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. You hear a click on the phone. Your friend announces that another call came in and asks you to wait for a minute. After several long minutes you decide to hang up and are not sure whether you should phone again.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about phone conversations I have had with friends.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to you or your personal characteristics?

0	1	2	3	4
not at all due you				totally due to you

(continued)

8. To what extent was this outcome due to factors other than you, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

You are sitting in your room comfortably, thinking about weekend plans. You decide to call a friend to include in your plans. Your friend answers and is pleased to hear from you. The two of you discuss what each of you has been up to since last you spoke.

You also exchange some news about mutual friends. You're enjoying the conversation and are getting excited about the weekend. Your friend also seems interested in getting together, so you discuss some plans for the weekend. You mention meeting Saturday night in your neighborhood, which has a lot of fun places where the two of you could go.

You hear a click on the phone. Your friend announces that another call came in and asks you to wait for a minute. After several long minutes you decide to hang up and are not sure whether you should phone again.

****

What would you do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that your friend would leave you waiting on the phone?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. You hear a click on the phone. Your friend announces that another call came in and asks you to wait for a minute. After several long minutes you decide to hang up and are not sure whether you should phone again.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. You end the conversation by agreeing on an exact time and place in your neighborhood where you'll meet.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. Your friend remembers that another friend won four free tickets for a big weekend concert and asks whether you want to go too.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about phone conversations I have had with friends.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to you or your personal characteristics?

0	1	2	3	4
not at all due you				totally due to you

(continued)

8. To what extent was this outcome due to factors other than you, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of Joe in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

Joe is sitting in his room comfortably, thinking about weekend plans. He decides to call a friend to include in his plans. His friend answers and is pleased to hear from him. The two of them discuss what each has been up to since last they spoke.

They also exchange some news about mutual friends. Joe is enjoying the conversation and is getting excited about the weekend. Joe's friend also seems interested in getting together, so they discuss some plans for the weekend. Joe mentions meeting Saturday night in his neighborhood, which has a lot of fun places where the two of them could go.

Joe's friend remembers that another friend won four free tickets for a big weekend concert and asks whether he wants to go too.

****

What would Joe do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that Joe would get invited to the concert?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. Joe's friend remembers that another friend won four free tickets for a big weekend concert and asks whether he wants to go too.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. Joe ends the conversation by agreeing on an exact time and place in his neighborhood to meet his friend.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. Joe hears a click on the phone. Joe's friend announces that another call came in and asks him to wait for a minute. After several long minutes Joe decides to hang up and is not sure whether he should phone again.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about phone conversations I have had with friends.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to Joe or his personal characteristics?

0	1	2	3	4
not at all due Joe				totally due to Joe

(continued)

8. To what extent was this outcome due to factors other than Joe, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of Joe in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

Joe is sitting in his room comfortably, thinking about weekend plans. He decides to call a friend to include in his plans. His friend answers and is pleased to hear from him. The two of them discuss what each has been up to since last they spoke.

They also exchange some news about mutual friends. Joe is enjoying the conversation and is getting excited about the weekend. Joe's friend also seems interested in getting together, so they discuss some plans for the weekend. Joe mentions meeting Saturday night in his neighborhood, which has a lot of fun places where the two of them could go.

Joe hears a click on the phone. Joe's friend announces that another call came in and asks him to wait for a minute. After several long minutes Joe decides to hang up and is not sure whether he should phone again.

****

What would Joe do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that Joe's friend would leave him waiting on the phone?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. Joe hears a click on the phone. Joe's friend announces that another call came in and asks him to wait for a minute. After several long minutes Joe decides to hang up and is not sure whether he should phone again.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. Joe ends the conversation by agreeing on an exact time and place in his neighborhood to meet his friend.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. Joe's friend remembers that another friend won four free tickets for a big weekend concert and asks whether he wants to go too.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about phone conversations I have had with friends.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to Joe or his personal characteristics?

0	1	2	3	4
not at all due Joe				totally due to Joe

(continued)

8. To what extent was this outcome due to factors other than Joe, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

You are an undergraduate college student at a Midwestern university. The university has a good reputation; the majority of students have above average high school grades and entrance exam scores.

One of the courses in which you are enrolled is a 100 level course in a department in which you have never taken a class. In fact, it is in an area in which you feel you have very little knowledge.

The time of your first exam arrives, which was intended to cover 8 weeks of material (half the semester). You study 3-4 days for it. You think that you spent about as much time studying for the test as most students. You spent the majority of your study time on your class notes and feel that you know this material well. However, you did miss a few lectures and you were unable to obtain a copy of these notes. While you did look over all the required reading assignments, you feel that you would have liked to have had a little more time to study this material. Since this is the first test in the class, you are not sure how difficult the exam might be.

****

Below, you will find several possible outcomes for this scenario. Please read each and answer the questions regarding how probable each outcome is.

1. You receive a passing grade on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

2. You receive an "A" on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

3. You receive the lowest score in the class on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

4. You receive a "B" on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

5. You receive a "D" on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

6. You receive the highest score in the class on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

As you read the following scenario, form a mental image of Robyn in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

Robyn is an undergraduate college student at a Midwestern university. The university has a good reputation; the majority of students have above average high school grades and entrance exam scores.

One of the courses in which Robyn is enrolled is a 100 level course in a department in which she has never taken a class. In fact, it is in an area in which she feels she has very little knowledge.

The time of Robyn's first exam arrives, which was intended to cover 8 weeks of material (half the semester). She studies 3-4 days for it. She thinks that she spent about as much time studying for the test as most students. She spent the majority of her study time on her class notes and feel that she knows this material well. However, Robyn did miss a few lectures and she was unable to obtain a copy of these notes. While she did look over all the required reading assignments, Robyn feels that she would have liked to have had a little more time to study this material. Since this is the first test in the class, she is not sure how difficult the exam might be.

****

Below, you will find several possible outcomes for this scenario. Please read each and answer the questions regarding how probable each outcome is.

1. Robyn receives a passing grade on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

2. Robyn receives an "A" on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

3. Robyn receives the lowest score in the class on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

4. Robyn receives a "B" on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

(continued)

****

5. Robyn receives a "D" on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

****

6. Robyn receives the highest score in the class on this exam.

How likely do you think this outcome is? In the blank below, write your best estimate of the percentage chance of this outcome occurring (0% = certain not to occur, 100% = certain to occur).

There is a _____ % chance of this outcome occurring.

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

You are an undergraduate college student at a Midwestern university. The university has a good reputation; the majority of students have above average high school grades and entrance exam scores.

One of the courses in which you are enrolled is a 100 level course in a department in which you have never taken a class. In fact, it is in an area in which you feel you have very little knowledge.

The time of your first exam arrives, which was intended to cover 8 weeks of material (half the semester). You study 3-4 days for it. You think that you spent about as much time studying for the test as most students. You spent the majority of your study time on your class notes and feel that you know this material well. However, you did miss a few lectures and you were unable to obtain a copy of these notes. While you did look over all the required reading assignments, you feel that you would have liked to have had a little more time to study this material. Since this is the first test in the class, you are not sure how difficult the exam might be.

You receive the highest score in the class on this exam.

****

What would you do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that you would receive the highest grade in the class ?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. You receive the highest score in the class on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. You receive a passing grade on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. You receive the lowest score in the class on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about my own performance on exams.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to your or your personal characteristics?

0	1	2	3	4
not at all due you				totally due to you

(continued)

8. To what extent was this outcome due to factors other than you, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of yourself in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

You are an undergraduate college student at a Midwestern university. The university has a good reputation; the majority of students have above average high school grades and entrance exam scores.

One of the courses in which you are enrolled is a 100 level course in a department in which you have never taken a class. In fact, it is in an area in which you feel you have very little knowledge.

The time of your first exam arrives, which was intended to cover 8 weeks of material (half the semester). You study 3-4 days for it. You think that you spent about as much time studying for the test as most students. You spent the majority of your study time on your class notes and feel that you know this material well. However, you did miss a few lectures and you were unable to obtain a copy of these notes. While you did look over all the required reading assignments, you feel that you would have liked to have had a little more time to study this material. Since this is the first test in the class, you are not sure how difficult the exam might be.

You receive the lowest score in the class on this exam.

****

What would you do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that you would receive the lowest grade in the class ?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. You receive the lowest score in the class on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. You receive a passing grade on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. You receive the highest score in the class on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about my own performance on exams.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to your or your personal characteristics?

0	1	2	3	4
not at all due you				totally due to you

(continued)

8. To what extent was this outcome due to factors other than you, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of Robyn in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

Robyn is an undergraduate college student at a Midwestern university. The university has a good reputation; the majority of students have above average high school grades and entrance exam scores.

One of the courses in which Robyn is enrolled is a 100 level course in a department in which she has never taken a class. In fact, it is in an area in which she feels she has very little knowledge.

The time of Robyn's first exam arrives, which was intended to cover 8 weeks of material (half the semester). She studies 3-4 days for it. She thinks that she spent about as much time studying for the test as most students. She spent the majority of her study time on her class notes and feel that she knows this material well. However, Robyn did miss a few lectures and she was unable to obtain a copy of these notes. While she did look over all the required reading assignments, Robyn feels that she would have liked to have had a little more time to study this material. Since this is the first test in the class, she is not sure how difficult the exam might be.

Robyn receives the highest score in the class on this exam.

****

What would Robyn do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that Robyn would receive the highest grade in the class ?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. Robyn receives the highest score in the class on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. Robyn receives a passing grade on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. Robyn receives the lowest score in the class on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about my own performance on exams.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to Robyn or her personal characteristics?

0	1	2	3	4
not at all due Robyn				totally due to Robyn

(continued)

8. To what extent was this outcome due to factors other than Robyn, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

As you read the following scenario, form a mental image of Robyn in the situation and visualize it as clearly as possible. After reading the scenario carefully, please answer the questions that follow.

Robyn is an undergraduate college student at a Midwestern university. The university has a good reputation; the majority of students have above average high school grades and entrance exam scores.

One of the courses in which Robyn is enrolled is a 100 level course in a department in which she has never taken a class. In fact, it is in an area in which she feels she has very little knowledge.

The time of Robyn's first exam arrives, which was intended to cover 8 weeks of material (half the semester). She studies 3-4 days for it. She thinks that she spent about as much time studying for the test as most students. She spent the majority of her study time on her class notes and feel that she knows this material well. However, Robyn did miss a few lectures and she was unable to obtain a copy of these notes. While she did look over all the required reading assignments, Robyn feels that she would have liked to have had a little more time to study this material. Since this is the first test in the class, she is not sure how difficult the exam might be.

Robyn receives the lowest score in the class on this exam.

****

What would Robyn do next in this situation? _____

_____

_____

(continued)

****

What would you have said the chance was of several possible outcomes **before you knew that Robyn would receive the lowest grade in the class ?** Below, you will find three possible outcomes for this scenario. Please read each and answer the questions regarding how probable you would have thought each was before you knew the actual outcome.

1. Robyn receives the lowest score in the class on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

2. Robyn receives a passing grade on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

****

3. Robyn receives the highest score in the class on this exam.

Before I knew the actual outcome, I would have thought there was a _____ % chance (0% = certain not to occur, 100% = certain to occur) of this outcome occurring.

(continued)

****

Before completing the following questions, please re-read the scenario.

****

1. Obviously, not all the details were included in the scenario. In the space provided below, write down more information that would help another person to understand why the events and outcome of this scenario occurred as they did.

(continued)

Please circle the number which best indicates your response to the following questions/statements.

2. Has this type of situation happened to you?

0	1	2	3	4
never	rarely	occasionally	often	always

3. When I read this scenario, I imagined myself in this situation.

0	1	2	3	4
not at all true				completely true

4. Reading this made me think about my own performance on exams.

0	1	2	3	4
not at all				very much

5. To what extent would this outcome make you feel bad?

0	1	2	3	4
not at all				very much

6. To what extent would this outcome make you feel good?

0	1	2	3	4
not at all				very much

7. To what extent was this outcome due to Robyn or her personal characteristics?

0	1	2	3	4
not at all due Robyn				totally due to Robyn

(continued)

8. To what extent was this outcome due to factors other than Robyn, for example, another person or the situation ?

0	1	2	3	4
not at all due to other factors				totally due to other factors

REFERENCES

Abramson, L. Y., Seligman, M. E. P., & Teasdale, J. (1978). Learned helplessness in humans: Critique and reformation. Journal of Abnormal Psychology, 87, 49-74.

Ackerman, R., & DeRubeis, R. J. (1991). Is depressive realism real? Clinical Psychology Review, 11, 565-584.

Agans, R. P. & Shaffer, L. S. (1994). The hindsight bias: The role of the availability heuristic and perceived risk. Basic and Applied Social Psychology, 15, 439-449.

Albright, J. S., & Henderson, M. C. (1995). How real is depressive realism? A question of scales and standards. Cognitive Therapy and Research, 19, 589-609.

Alloy, L. B., & Abramson, L. Y. (1988). Depressive realism: Four theoretical perspectives. In L. B. Alloy (Ed.), Cognitive processes in depression (pp. 223-265). New York: Guilford Press.

Andersen, S. M. (1990). The inevitability of future suffering: The role of depressive predictive certainty in depression. Social Cognition, 8, 203-228.

Andersen, S. M., and Schwartz, A. H. (1992). Intolerance of ambiguity and depression: A cognitive vulnerability factor linked to hopelessness. Social Cognition, 10, 271-298.

Arkes, H. R. (1988). Comment on the article by Verplanken and Pieters. Journal of Behavioral Decision Making, 1, 146.

Arkes, H. R., Wortmann, R. C., Saville, P. D., & Harkness, A. R. (1981). Hindsight bias among physicians weighing the likelihood of diagnoses. Journal of Applied Psychology, 66, 252-254.

Beck, A. T., Rush, A. J., Shaw, B. F., & Emery, G. (1979). Cognitive therapy of

depression. New York: Guilford Press.

Beck, A. T., Steer, R. A., & Garbin, M. G. (1988). Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clinical Psychology Review, 8, 77-100.

Bower, G. H. (1981). Mood and memory. American Psychologist, 36, 129-148.

Bryant, F. B. & Brockway, J. H. (1997). Hindsight bias in reaction to the verdict in the O. J. Simpson criminal trial. Basic and Applied Social Psychology, 19, 225-241.

Burns, D. D., Shaw, B. F., & Croker, W. (1987). Thinking styles and coping strategies of depressed women: An empirical investigation. Behaviour Therapy and Research, 25, 223-225.

Campbell, J. D. (1986). Similarity and uniqueness: The effects of attribute type, relevance, and individual differences in self-esteem and depression. Journal of Personality and Social Psychology, 50, 281-294.

Campbell, J. D., & Tesser, A. (1983). Motivational interpretations of hindsight bias: An individual difference analysis. Journal of Personality, 51, 605-620.

Carli, L. L. & Leonard, J. B. (1989). The effect of hindsight on victim derogation. Journal of Social & Clinical Psychology, 8, 331-343.

Chow, S. L. (1988). Significance test or effect size? Psychological Bulletin, 103, 105-110.

Christensen-Szalawski, J. J. J., & Willham, R. F. (1991). The hindsight bias: A meta-analysis. Organizational Behavior and Human Decision Processes, 48, 147-168.

Cohen, J. (1994). The earth is round ($p < .05$). American Psychologist, 49 , 997-1003.

Cohen, L., Van den Bout, J., Van Vliet, T., & Kramer, W. (1989). Attributional asymmetries in relation to dysphoria and self-esteem. Personality and Individual Differences, 10, 1055-1961.

Coyne, J. C. (1994). Self-reported distress: Analog or ersatz depression? Psychological Bulletin, 116, 29-45.

Creyer, E., & Ross, W. T. (1993). Hindsight bias and inferences in choice: The mediating effect of cognitive effort. Organizational Behavior and Human Decision Processes, 55, 61-77.

Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. Journal of Personality and Social Psychology, 44, 113-126.

Davies, M. F. (1993). Field-dependence and hindsight bias: Output interference in the generation of reasons. Journal of Personality, 27, 222-237.

Dobson, K. S., & Shaw, B. F. (1986). Cognitive assessment with major depressive disorders. Cognitive Therapy and Research, 10, 13-29.

Fischoff, B. (1975). Hindsight does not equal foresight: The effect of outcome knowledge on judgment under uncertainty. Journal of Experimental Psychology: Human Perception and Performance, 1, 288-299.

Fischoff, B. (1977). Perceived information of facts. Journal of Experimental Psychology: Human Perception and Performance, 3, 349-358.

Fischoff, B., & Beyth, R. (1975). "I knew it would happen"-remembered probabilities of once-future things. Organizational Behavior and Human Performance, 13, 1-16.

Golin, S., Terrel, F., Weitz, J., & Drost, P. L. (1979). The illusion of control among depressed patients. Journal of Abnormal Psychology, 88, 454-457.

Haaga, D. A. F., Dyck, M. J., & Ernst, D. (1991). Empirical status of the cognitive theory of depression. Psychological Bulletin, 110, 215-236.

Haley, G. M. T., Fine, S., Marriage, K., Moretti, M. M., & Freeman, R. J. (1985). Cognitive bias and depression in psychiatrically disturbed children and adolescents. Journal of Consulting and Clinical Psychology, 53, 535-537.

Hartlage, S., Alloy, L. B., Vazquez, C., & Dykman, B. (1993). Automatic and effortful processing in depression. Psychological Bulletin, 113, 247-278.

Haslam, N., & Jayasinghe, N. (1995). Negative affect and hindsight bias. Journal of Behavioral Decision Making, 8, 127-135.

Hawkins, S. A., & Hastie, R. (1990). Hindsight: Biased judgments of past events after the outcomes are known. Psychological Bulletin, 107, 311-327.

Hell, W., Gigerenzer, G., Gauggel, S., Mall, M., & Muller, M. (1988). Hindsight bias: An interaction of automatic and motivational factors. Memory & Cognition, 16, 533-538.

Hoch, S. J., & Loewenstein, G. F. (1989). Outcome feedback: Hindsight and information. Journal of Experimental Psychology: Learning, Memory, and Cognition, 15, 605-619.

Howell, D. C. (1992). Statistical methods for psychology. (3rd ed.). Belmont, CA: Duxbury Press.

Janoff-Bulmann, R. (1979). Characterological versus behavioral self-blame: Inquiries into depression and rape. Journal of Personality and Social Psychology, 37, 1798-1809.

Janoff-Bulmann, R., Timko, C., & Carli, L. L. (1985). Cognitive biases in blaming the victim. Journal of Experimental Social Psychology, 21, 161-177.

Lewinsohn, P. M., Mischel, W., Chaplin, W., & Barton, R. (1980). Social competence and depression: The role of illusory self-perceptions. Journal of Abnormal Psychology, 89, 203-212.

Lobitz, W. C., & Post, R. D. (1979). Parameters of self-reinforcement and depression. Journal of Abnormal Psychology, 88, 33-41.

Loftus, G. R. (1993). A picture is worth a thousand P values: On the irrelevance of hypothesis testing in the microcomputer age. Behavior Research Methods, Instruments, & Computers, 25, 250-256.

Kuiper, N. A., Derry, P. A., & MacDonald, D. (1981). Self-reference and person perception in depression: A social cognition perspective. In G. Weary & H. Mirels (Eds.) Integration of clinical and social psychology (pp. 79-103). New York: Oxford University Press.

Mark, M. M., & Mellor, S. (1991) Effect of self-relevance of an event on hindsight bias: The foreseeability of a layoff. Journal of Applied Psychology, 76, 569-577.

Mark, M. M. & Mellor, S. (1994). We don't expect it to happen: On Mazursky and Ofir's (1990) purported reversal of the hindsight bias. Organizational Behavior and Human Decision Processes, 57, 247-252.

Mazursky, D., & Ofir, C. (1990). "I could never have expected it to happen": The reversal of the hindsight bias. Organizational Behavior and Human Decision Processes, 46, 20-33.

Pennington, D. C., Rutter, D. R., McKenna, K., & Morley, I. E. (1980). Estimating the outcome of a pregnancy test: Women's judgments in foresight and hindsight. British Journal of Social and Clinical Psychology, 19, 317-324.

Pyszczynski, T., Holt, K., & Greenberg, J. (1987). Depression, self-focused attention, and expectancies for positive and negative future life events for self and others. Journal of Personality and Social Psychology, 52, 994-1001.

Raps, C. S., Peterson, C., Reinhard, K. E., Abramson, L. Y., & Seligman, M. E. P. (1982). Attributional style among depressed patients. Journal of Abnormal Psychology, 91, 347-374.

Riskind, J. H., Rholes, W. S., Brannon, A. M., & Burdick, C. A. (1987). Attributions and expectations: A confluence of vulnerabilities in mild depression in a college student population. Journal of Personality and Social Psychology, 53, 349-354.

Rizley, R. (1978). Depression and distortion in the attribution of causality. Journal of Abnormal Psychology, 87, 32-48.

Roese, N. J., & Olson, J. M. (1996). Counterfactuals, causal attributions, and the hindsight bias: A conceptual integration. Journal of Experimental Social Psychology, 32, 197-227.

Schkade, D. A., & Kilbourne, L. M. (1991). Expectation-outcome consistency and hindsight bias. Organizational Behavior and Human Decision Processes, 49, 105-123.

Sweeney, P. D., Anderson, K., & Bailey, S. (1986). Attributional style in depression: A meta-analytic review. Journal of Personality and Social Psychology, 50, 974-991.

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and probability. Cognitive Psychology, 5, 207-232.

Verplanken, B., & Pieters, R. G. M. (1988). Individual differences in reverse hindsight bias: I never thought something like Chernobyl would happen. Did I? Journal of Behavioral Decision Making, 1, 131-147.

Walster, E. (1967). 'Second guessing' important events. Human Relations, 20, 239-249.

Wasserman, D., Lempert, R. O., & Hastie, R. (1991). Hindsight bias and causality. Personality and Social Psychology Bulletin, 17, 30-35.

VITA

The author, Gregory W. Bailey, was born in Mayfield Hts., Ohio on October 2, 1972.

Mr. Bailey entered Miami University in Oxford, Ohio in August, 1991. He received a degree of Bachelor of Arts in psychology and economics in May, 1995. While attending Miami, he was a selected as a member of Phi Betta Kappa honor society and Psi Chi, the national honor society in psychology. Mr. Bailey also received several other honors for his academic achievement, including University Honors, Deparmental Honors in psychology, and the Patten Prize for distinguished achievement by a Miami University undergraduate student in psychology.

In August, 1995, Mr. Bailey entered the doctoral program in clinical psychology at Loyola University of Chicago with a research assistantship in psychology. He will complete his Master of Arts degree in May, 1998.

THESIS APPROVAL SHEET

The thesis submitted by Gregory W. Bailey has been read and approved by the following committee:

Jeanne S. Zechmeister, Ph. D., Director
Associate Professor of Psychology
Loyola University Chicago

Fred B. Bryant, Ph. D.
Professor of Psychology
Loyola University Chicago

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the committee with reference to content and form.

The thesis is therefore accepted in partial fulfillment of the requirements for the degree of Master of Arts.

4-1-98
Date

Jeanne S. Zechmeister
Director's Signature